"Do not fear to be eccentric in opinion, for every opinion now accepted was once eccentric."

Bertrand Russell

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Review of Applied Socio-Economic Research

Volume 24, Issue 2 / 2022

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ISSN: 2247-6172; ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2 / 2022), pp. 2
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

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Editors:
Cristina Barna
Manuela Epure

ISSN: 2247-6172; ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2 / 2022), pp. 3
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

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ISSN: 2247-6172, ISSN - L: 2247-6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2/ 2022), pp. 4
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Editorial Foreword

Dear Readers,

Welcome to a new issue of our scientific journal, ***Review of Applied Socio-Economic Research – Volume 24 / issue 2 / 2022***. This issue brings to your attention current socio-economic research topics for our transformative period.

Review of Applied Socio-Economic Research – Volume 24 / issue 2 / 2022 provides a venue for high-quality research works of academics and researchers from worldwide, such as the United Kingdom, Czech Republic, Armenia, Indonesia, India, Japan, Jordan, Qatar, or the United Arab Emirates.

In this issue, new challenging research questions arise in the Review of Applied Socio-Economic Research areas of coverage - Economics and Business Research, Marketing & Innovation Management Dynamics, New economy models, Social Innovation, Global Challenges, and Interdisciplinary Research in Social Sciences. The authors approached various interest subjects such as the resilience of indigenous entrepreneurs during the Covid-19 pandemic, the rise of the Social and Solidarity Economy as a new alternative development model, evolutions in the share market, employment performance, real exchange rate, Triple Helix concept, business performance and organizational challenges in different types of SMEs, Fintech and Islamic banks, Public-Private Partnerships in Japan, and engaging analysis of educational issues, as education expansion or education as a factor of influencing economic growth.

We want to thank our authors who found in our review an appropriate forum of academic and research debate on the above topics, our reviewers for their hard and quality work, and to all those who contributed to the Review of Applied Socio-Economic Research – Volume 24 / issue 2 / 2022!

Enjoy your reading!

Dr. Cristina Barna

Editor in Chief
Review of Applied Socio-Economic Research

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Embracing Covid-19 pandemic: Entrepreneurship within the Indigenous context

[1+] Bendangienla Aier, [2] Prabodha Kumar Hota and [3] Niharika Singh

[1] Post-Doctoral Fellow, Centre of Excellence Study on Unorganized Labour, Utkal University, Bhubaneshwar, Odisha, India
[2] Coordinator, Centre of Excellence Study on Unorganized Labour, Utkal University, Bhubaneshwar, Odisha, India
[3] Post-Doctoral Fellow, Indian Council of Social Science Research, Mizoram University, Aizawl, India

Abstract: *Resilience implies a continuous transformation process and learning through a crisis. The study aims to identify the role of resilience during the Covid-19 pandemic. To identify the most challenging transformations of the entrepreneurs, we explored the extent to which business models were altered through the first and second Covid-19 lockdowns. The narrative research design was adopted to provide insights into entrepreneurs' thoughts, emotions, and interpretations' by taking on the stories of seven indigenous entrepreneurs of India. Social capital (family and community) and problem-focused coping gained prominence in developing the resilience of the indigenous entrepreneurs throughout the crisis, while emotion-focused coping emerged as the initial strategy utilized against the crisis.*

Keywords: *Covid-19, India, Indigenous entrepreneurs, Resilience, Marginalised communities*

JEL Codes: M10

1. Introduction

'Indigenous' has diverse definitions by different associations; the indigenous societies worldwide are identified by distinctive societal and political setups and also encompass a unique heritage, culture, and spiritual belief system (Johnstone, 2008). United Nations states that indigenous people today are arguably among the most disadvantaged and vulnerable groups of people in the world. Hindle and Lansdowne (2005) define indigenous entrepreneurship as 'the creation, management, and development of new ventures by indigenous people for the benefit of indigenous people.' Recently, Ramadani *et al*. (2015) claimed the prevalence of remarkable differences between indigenous and non-indigenous entrepreneurship, whilst the investigation on later is still emerging.

Research about indigenous entrepreneurs is considered very rewarding because of the rich social and cultural distinction among indigenous people. Furthermore, some identified variables are based on cultural values, which are often not found in the mainstream theories of entrepreneurship (Dana, 2015). Though the indigenous people are amongst the poorest and most socially disadvantaged members of any society (Wood & Davidson, 2011) yet the growing interest in sustainability and indigenous culture draws considerable attention to learning about indigenous entrepreneurs and their enterprise management (Ratten & Dana, 2017)

[+] **Corresponding author**: *Email address*: abendangienla@yahoo.com

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

and it is for this reason that Nagaland (India) is chosen for the present study. In India, the indigenous people form less than 10 percent of the population; hence they're statistically minorities, and their entrepreneurial endeavors are also poorly understood. Nevertheless, the lights shed on the impact of the Covid-19 crisis, MERS, SARS, and Ebola on indigenous entrepreneurs are scarce as the existing research on this line is mostly reported from developed nations (Pine and Mckercher, 2004; Cole and Watkins, 2015).

Resilience- the ability to survive and bounce back from failures- is a concept that became popular in times of the Covid-19 pandemic, economic crisis, and post-recession. Resilience is essential for every individual to overcome adversities and prepare for future challenges; however, the occupational nature of entrepreneurship makes resilience an essential forte for the owner of firms. The concept of resilience in entrepreneurship research gained new momentum recently (Williams *et al*., 2017; Clement and Rivera, 2017; Limnios *et al*., 2014; Linnenluecke, 2017), and still, the concept needs validation in different contexts and increase the significance of the concept for practice and research. Therefore, this case study probe into indigenous entrepreneurs by taking on the concept of resilience as a process to answer how the entrepreneurs responded to the covid-19 crisis and to identify differences between their responses at all the stages of Covid-19 pandemic lockdowns.

2. Literature Review

Indigenous entrepreneurship

Indigenous entrepreneurship often represents the SME sector, and according to Shams (2020), indigenous entrepreneurs are the least researched topic amongst SMEs. Interest in indigenous entrepreneurship among researchers has grown immensely in the recent past (Croce, 2017; Logue *et al*., 2018; Ratten and Dana, 2017). And like in any other country, the Indian indigenous entrepreneurship research also found less interest among the researchers compared to mainstream entrepreneurship.

Entrepreneurship is essential to the indigenous people because employment in formal and informal sectors is far-fetched, being away from mainstream societies and reluctance to migrate to greener pasture due to discrimination and marginalization which is a direct reflection of the structural barriers in the Indian society (Wylie and Mckonkey, 2018), likewise, the Maori entrepreneurs in New Zealand also viewed entrepreneurship as a path to emancipation (Henry *et al*., 2018). However, another school of thought postulates that indigenous entrepreneurship is an economic activity driven by economic and non-economic motives (Mrabure, 2021). In contrast, entrepreneurship in Canada is employed as a poverty alleviation strategy among indigenous communities (Anderson & Giberson, 2003). According to Onwuegbuzie and Mafimisebi (2021), indigenous entrepreneurship is the application of indigenous knowledge for the creation of products and services. These forms of businesses defy traditional patterns of behavior by utilizing their resources in the pursuit of self-determination and economic sustainability via their entry into self-employment, forcing social change in the pursuit of opportunity beyond the cultural norms of their initial economic resources (Foley, 2000). Promotion of culture and community wellbeing holds strong to these entrepreneurs, and thereby their entrepreneurial motivation is not purely economic (Lindsay, 2005). Cultural and social aspects are embedded in the businesses throughout indigenous societies, which create a unique style of entrepreneurship as it is mostly community oriented and it provides diverse livelihood outcomes; the

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
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uniqueness is endowed by the distinctive set of culture, heritage, and spiritual beliefs of these entrepreneurs (Johnstone, 2008). Collins *et al*. (2017) also postulated affiliation towards family as a key feature across the indigenous business owners; their product/service offerings are clubbed with culture, which has been transmitted from generation to generation through their families, making it very authentic and not easily replicable by competitors. Such authentic offerings by indigenous entrepreneurs make them valuable and help them gain more recognition in affluent countries (Duffy, 2019).

Indigenous entrepreneurs believe in the development of the economy along with society. Many previous researchers (Lituchy *et al*., 2007; Woods & Davidson, 2011) asserted that they are driven to entrepreneurship to elevate their living conditions, social wellbeing, and societal acceptance. Recent awareness about sustainability and indigenous culture among the consumers gravitated them toward different forms of business operated by indigenous people, which provided the opportunity for self-employment for the indigenous people. Additionally, to supplement the diverse culture prevalent among indigenous people, there is a need to look at it through the geographical lens as well (Ratten & Dana, 2017). Foley (2012, 2013, 2017) identified Australian indigenous entrepreneurs who commenced with no or less business expertise, weak educational qualification, low capital, limited access to finances, and no property for bank security and network, which depicts that they certainly fall under the small or medium enterprises with limited means of profit creation.

Entrepreneurial Resilience

The resilience of entrepreneurs connotes more than the success or survival of firms; it implies promoting a positive trajectory over predicaments and the substantial growth and development that materialize. These individuals strive to deter norms- social, cultural, and political (Loh and Dahesihsari, 2013), war, and terrorism (Branzei and Abdelnour, 2010). Meanwhile, Dahles & Susilowati (2015) adhere to entrepreneurial resilience as an ability to endure, adapt, and cope with adverse conditions and external shocks, and Li *et al*. (2015) link entrepreneurial resilience to the ability to reform firm resources in an innovative way. On the contrary, Ismail *et al*. (2011) define it as keeping up a positive attitude by redefining a firm's capabilities amidst challenging business scenarios to develop resilience. Such capabilities help entrepreneurs to overcome negative with positive emotions, which, however, should be intentionally cultivated initially (Tugade and Fredrickson, 2007).

Resilience as a capability is a product of varied elements. The understanding of different contributing factors is still limited (Van der Vegt *et al*., 2015). Yet, emerging studies contribute to this gap, such as Hayward et al. (2010), who assent confidence of entrepreneurs as a key attribute to forming successive ventures after past failures. In contrast, scholars like Britt *et al*. (2016) and Masten (2001) advocate social relations, such as community, family, fellow entrepreneurs, etc., as an essential part of resilience building. The support drawn from these social ties ranges from structural support like capital resources and knowledge on how to handle business to functional support such as moral boost and emotional support (Pollack *et al*., 2012). Cognitive capability endowment, as deemed by William *et al*. (2017), which is also called coping skills by psychologists, has been identified as capabilities that significantly contribute to resilience (Seery *et al*., 2010). Coping strategies were broadly classified into cognitive-based responses and emotion-based responses (Lazarus & Folkman, 1984), and during the Covid-19 pandemic, Chinese SMEs applied coping strategies in five areas: finance, HR, products, operations, and networks (Alves *et al*., 2020). Though the

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

long-term effect of these strategies is yet to be determined, it clearly states the relevance of coping among entrepreneurs during a crisis. Entrepreneurial resilience is also dependent on external factors such as culture, society, community, etc. besides internal characteristics (Hedner *et al*., 2011), psychological traits (Folke, 2006), innovation and networking (Huggins *et al*., 2014), diversity, efficiency, adaptability and cohesion (Penades, Nunez and Canos, 2017) skills, abilities, knowledge, and processes (Williams *et al*., 2017).

Entrepreneurial resilience is important for the growth and survival of firms during normal and adverse conditions; it enables the entrepreneurs to transform disruption into opportunities by incorporating changes and reinventing to the new circumstance brought by the shocks (Williams and Vorley, 2014; Branicki *et al*., 2018). It also plays an equally significant role in the post-crisis scenario, given that resilience is cited as the 'ability to recover from disruptions (Cooke, 2011), while Coates *et al*. (2020) state it as an ability to return back stronger than the pre-crisis state due to the abilities it developed on the process.

Entrepreneurship in the Naga society

Agriculture has been the bulwark of the economy in the Naga society, but the economic networking, inter-dependence, and exchange then, as now, have been complex. The economic livelihood of the Naga communities had been largely subsistence-based; nevertheless, the idea of surplus, reciprocity, and trading with other communities had existed in the past. The idea of the surplus was intrinsic to the economic livelihood, as it was linked with social prestige manifested in cultural practices like the feast of merit. In one of the earliest reports on the Naga tribes, Pemberton gives an account of trading activities between the Nagas and people dwelling in the valleys. In their mercantile trips to the Banskandee and Munipore bazars, they usually exchange their superfluous cotton for fowls, salt, dried fish, tobacco, and cloth – and are almost always accompanied by some of their indefatigable females, whose muscular power appears but little inferior to the of the men. (Elwin, 1969: 45)

Colonial records show that powerful Angami Naga villages like Khonoma and Mezoma were involved in slave trading with lowland traders in Upper Assam (Cederlöf, 2014: 194). With the coming of British rule, Naga tribes were introduced to a monetized economy, but even before the arrival of the British, Nagas, for centuries, had been maintaining trade relations with people in the plains like the Ahoms. It may be argued that the idea of entrepreneurship in its rudimentary form has existed in the traditional Naga society. The beginnings of the Naga entrepreneurial class in a market economy may be traced to the colonial period in the early part of the twentieth century. Still, the transition of the Nagas from an agriculture-based economy to a business economy has been relatively slow. Entrepreneurship in the Naga society is significantly an outcome of modernization and cultural contact and is becoming a vital component of the modern economy. In the twenty-first century, many Naga youths are taking up entrepreneurship as a means of employment and livelihood, but Naga society faces steep challenges, as economic viability and entrepreneurial ethos are constrained by many social and economic factors.

3. Research Methodology

To explore the level of entrepreneurial resilience, the participants were interviewed right after the first and second lockdown and asked to describe the most paramount impact and the most pertinent strategic responses adopted. To develop a better understanding of entrepreneur's response strategies case study method was assumed since this method is well suited to investigate complex and new phenomena (Tasci *et*

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

al., 2020), unexplored or under-examined topics (Cakar & Aykol, 2021). As the case study method can include single or multiple cases (Gustafsson, 2017), we adapted multiple cases by taking on stories of seven entrepreneurs, given that resilience of indigenous entrepreneurs in India has been sparsely covered; hence qualitative method was implemented (Schonfeld and Mazzola, 2015). Only full-time indigenous entrepreneurs with 0-10 employees having a business existence for more than 10 years were selected based on the list of entrepreneurs collected from municipal and town councils of three districts. To maintain heterogeneity of data, indigenous entrepreneurs doing different businesses were selected. Two kinds of sampling techniques were used: purposeful sampling and snowball sampling. The respondents were initially selected purposefully from the researcher's contact, and while undertaking the interview, the entrepreneurs referred to similar entrepreneurs in their circles, thereby creating a 'snowballing" effect. Data were collected using semi-structured interviews (Yin, 2014). In order to increase the depth of responses, the interview questions were both prompts and sub-prompts (Rowley, 2012). The interviews were conducted in Nagamese and translated to English, which was cross-validated by an individual well versed in both languages, phone calls for the interview were made at their convenience and were recorded with their consent (Veal, 2011).

The study adopted a qualitative, narrative research design (Elliot, 2005; Richards, 2009); the narrative approach provides 'insights into people's thoughts, emotions and interpretations' (Thomas, 2012) and has gained importance in entrepreneurship research (Corner & Singh, 2015). Since All the participants experienced a covid-19 pandemic crisis, we focused on collective narrative and looked for common elements in the narrations (Elliot, 2005; Corner *et al*., 2017). Coding and data analysis were conducted by compiling verbatim transcripts. Next, we constructed a sequence of events (Elliot, 2005; Corner *et al*., 2017). We also analyzed narratives for the plot elements, such as the timing of events relative to each other (Corner *et al*., 2017). Further, the themes of each subject were put together to produce broader general themes.

4. Findings and Discussion

Time 1: Strategic response in the first lockdown

The first Covid-19 lockdown in India was imposed on 22 March 2020, and the responses were severe due to the newness of the situation. Figure 1 provides information about the response strategy of participants that was engineered to build resilience.

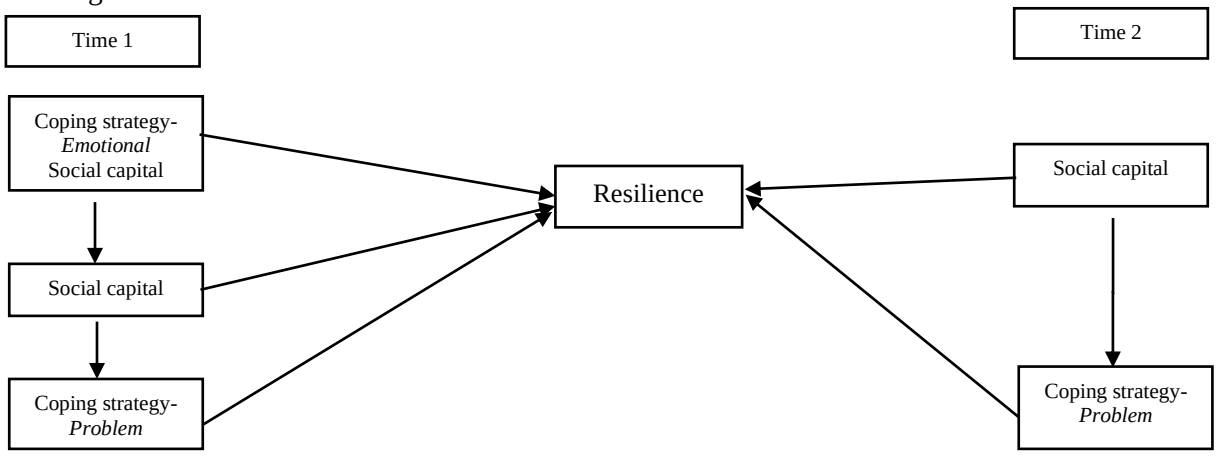

Figure 1: Framework of resilience development

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
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(i) Emotional Coping strategy

A crisis like Covid-19 requires emotional and mental calm to face uncertainty. Carving out space to recharge and taking care of mental stress became essential for entrepreneurs to navigate through trials and tribulations. Therefore, business owners used faith in God to overcome the unprecedented crisis; the findings of the study provide credence to the importance of religiosity in the activities of indigenous entrepreneurs. Three respondents acknowledged religion as a device to cope with stress, which helped them identify better business strategies. The intensity of religious participation ranged from '*I found myself praying more than often*' to '*I attended bible studies online organized by our pastor, and since all the church activities went online, it helped me join church services, counseling, and praying, which helped me sooth my agony.*' Similarly, Brazilian entrepreneurs who experienced business failures survived through faith in God (Ricardo, 2015) which clearly portrays a positive relationship between religious beliefs and business survival during the crisis. Likewise, Mr. Azo's initial response was to disregard the severity of the crisis and consider the lockdown a break from business activities. Similar to this finding, psychological research also shows that resilient people interpret adversities or challenges as less threatening (Tugade & Fredickson, 2004). On the other hand, some of the respondents emphasized physical fitness to boost immunity and stimulate mental well-being. Details of all the respondents are shown in table 1:

Table-1 Description of entrepreneurs

Sl No	Name	Gender	Age	Tribe	Type of business
1	Mrs. Keditsu	Female	>60	Angami	Pickle manufacturer
2	Ms. Hengna	Female	>40	Thangkul	Jewelry maker
3	Mr. Azo	Male	>40	Chakesang	Tourist guides
4	Mrs. Avinuo	Female	>50	Angami	Home-stay operator
5	Mr. Temjen	Male	>60	Ao	Traditional healer
6	Mr. Alem	Male	>50	Ao	Artisan
7	Mrs. Loreno	Female	>40	Lotha	Weaver

(ii) Social capital

Social capital emerged significantly through support from family, friends, religious groups, community, fellow entrepreneurs and mentors. All the participants referred to social capital as one of the major sources of resilience in the first pandemic lockdown. They responded positively to how spending time with family became essential to cope with Covid-19 stress. Mrs. Avinuo narrated how her family gave her solace '*I looked for joy in all those conversations with my children and to know that they are not distracted by the pandemic gave me strength to face each day*.' Two more respondents mentioned how family time helped to drive away anxiety and prayer meetings with family gave them peace. Friends and family emerged as a significant social capital because commitment to family by business owners emerged as one of the indicators of indigenous cultural identity (Collins *et al.,* 2017). Moreover, resilient individuals purposefully cultivate positive emotions because it is the key that aid individuals to bounce back and prepare for future adversities (Tugade & Fredrickson, 2007).

Some of the respondents also received aid from different Naga societies, churches and neighbours. Community voluntarily came forward to help, the entrepreneurs referred to help in the form of volunteers delivering medicines for the traditional healer, providing essential commodities to the employees of the jewellery maker to compensate for wage reduction and churches made bulk purchases to boost cashflow for the entrepreneurs. Social capital of entrepreneurs consists of relationship with individuals, communities,

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
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entities, and fellow entrepreneurs (Alder & Kwon, 2002; Putnam, 2000), and it also facilitates new entrepreneurs to combat uncertainty (Bowey and Easton, 2007; Danes *et al*., 2013).

(iii)Problem-focused coping

The business landscape changed at a rapid pace, and the most prominent problem-focused strategy that emerged was the establishment of a new form of business to suit the need of the situation. The entrepreneurs turned around their businesses. For example, the pickle manufacturer converted her hobby (gardening) into business. At the same time, the growing need for masks gave an opportunity to the jewelry maker to diversify production, and the tourist guide started a make-shift essential commodity shop. He said '*it was my only alternative to earn livelihood during the lockdown*.' While other businesses were compelled to shut, Mr. Temjen was obligated to take in more patients. Despite the fear of infection, he had to modify his business demeanor by consulting patients online, home delivery of medicine, and making arrangements to maintain Covid-19 protocol. Similarly, vocational constraints in the country prompted Palestinian individuals in Lebanon to start a business which in turn led to resilient outcomes (Shepherd and Williams, 2020).

Prior to the pandemic, these entrepreneurs followed the traditional method of buying and selling in the marketplace, whereby the physical exchange of money and goods took place. But digital selling and payments became a necessity. When asked, Mrs. Loreno happily noted, '*Customers sent sample photos of the product they wanted via Whatsapp and made digital payments*,' she further added, '*This pandemic forced me to move beyond my comfort zone, and it helped me to continue production despite the lockdown*.' Similarly, Mrs. Keditsu expressed the ease of conducting business by advertising online through social media, while the artisan worked to enhance their business knowledge. He utilized the pandemic lockdown to enrich his knowledge through various online training programs. Such proactive measures help entrepreneurs feel more in control and more confident in their abilities. On the whole, all the respondents turned around their businesses to suit the changing need, and their entrepreneurial competency emerged through coping strategies in the turbulent context. Additionally, developing good coping strategies offer a competitive edge over other entrepreneurs (Dijkuizen *et al*., 2016) and aids in enterprise longevity as well (Drnovsek *et al*., 2010).

Time 2: Strategic response in the second lockdown

The second lockdown saw mild/medium response from the same respondents though the impact was severe. One of the reasons is lesser business restrictions compared to the first lockdown, gradual lockdown, shorter lockdown, and more resilient entrepreneurs. Although there is no clear consensus on coping strategies following any pattern, a common pattern was identified over time. The participants did not resort to emotional coping strategies but rather relied on social capital to implement problem-focused strategies in the second phase. The chronology in figure 1 depicts a changed order: social capital problem-focused strategy.

(i) Social capital

It is arguable that a distinctive feature between indigenous and non-indigenous entrepreneurs is the inclusion of community and the role it plays in the creation, growth, and sustenance of the business. Similar occurrences emerged during the second lockdown. Mr. Azo expressed: '*My friends and family volunteered to run my shop while my entire family was in quarantine; that way, cashflow was not hindered."* People in the Naga society are closely knitted due to their involvement in various social platforms, which can be identified in the support rendered by the community. This outcome finds relevance among the Wayuu entrepreneurs of Colombia (Tretiakov *et al.,* 2019). Five out of seven entrepreneurs relied on friends and family, which strongly suggests indigenous entrepreneurs are deeply invested in their close ones.

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
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Social capital plays an important role in the resilience process, which entrepreneurs access from within and outside their network in times of crisis. The participants stated that their strategic orientation changed after the first pandemic crisis. Mrs. Keditsu adds: "*I strengthened relations with present suppliers and fished more suppliers to ensure pickle manufacture without hindrance.*" Lessons from the first lockdown were implemented to leverage social capital. The expressions of the participants also display taking concrete steps to leverage social capital by reaching out to external sources and taking corrective actions because social capital facilitates access to financial, information, and human resources (Florin *et al*., 2003). Mr. Alem states: *'I linked up with mentors and fellow entrepreneurs in a similar business to share knowledge and experiences, which helped my business to define the strategy for business development in order to bring more innovation and be more adaptable.'* Overall, the second phase saw entrepreneurs as self-assured, confident, and less pessimistic.

(ii) Problem-focused strategy

The strategic changes were dependent on the phase one hiccups. Home delivery and digital payments are solely a product of the Covid-19 pandemic in Nagaland. Furthermore, Ms. Hengna said: "*I collaborated with a retailer to sell my products; the move brought in more sales and be more competitive in the market*." Strategic collaboration was specified as a critical factor by many entrepreneurs for business development and the overall business environment. Five entrepreneurs considered that home-delivery as a key factor that affected their business development. Mrs. Loreno stated: "*I linked with the online delivery agency to enlarge business capacities and expand our product reach in the market.*" The entrepreneurs emphasized strengthening their businesses rather than establishing new businesses to counter the second lockdown. They have had collaborations and business partnerships with private players to expand market reach and survive the covid-19 pandemic.

Presently, it is unclear which kind of coping skills are more important to resilience, but research in entrepreneurship identified that combining coping skills results in long-term well-being. Lending support to this assertion, prior researchers (Carver *et al.*, 1989; Roth and Cohen, 1986; Solomon *et al.*, 1988) assert that multiple coping strategies are adopted by individuals while dealing with a stressful situation. The entrepreneurs also applied twofold usage of coping strategies, e.g., Mrs. Avinuo mentioned family and religion as a part of her emotional coping strategy '*I found peace by spending time praying, meditating on the words of God and family prayer meetings*.' Given that coping strategies are strongly connected with resilience as an outcome, it can be considered that emotional and problem-focused strategies are relevant capabilities of resilience.

5. Conclusion

This case study argues that resilience implies a continuous transformation process and learning through a covid-19 crisis which was analyzed based on the experience of seven indigenous entrepreneurs of Northeast India. The study's intention was to emphasize resilience as not just a characteristic or property but a dynamic process (Martin, 2012) that developed gradually over two major pandemic disruptions. The entrepreneur's description of the important impact and their strategic responses displayed the importance of social capital, emotion-focused coping, and problem-focused coping in the process of resilience building. The longitudinal nature of the study allowed us to identify the transition between different elements in resilience building (Kirkwood *et al*., 2017). The major takeaway from the study is the importance of emotional coping strategies in times of facing an unfamiliar crisis. This finding corroborates earlier work that suggests that individual utilizes emotion-based coping in situations perceived as less controllable (Mattlin *et al*.,1990). Being an ethnic minority group in India, the indigenous entrepreneurs were also deeply rooted in their community, forming a strong social capital and continued to provide resilience through both lockdowns. This confirms the findings of Altinay *et al*. (2016) and how cooperation and collaboration with the community help

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 5 - 17
URL: http://www.reaser.eu
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promote sustainable tourism and social value creation. The study also provides credence to the importance of religiosity in the activities of indigenous entrepreneurs.

This case study opens various discussions on resilience and indigenous entrepreneurship. First, fostering resilience development within a different context and the transition of resilience elements as and when the circumstance evolves, and how the continual process shapes the demeanor of entrepreneurs. The relevance of religiosity, especially the religious institution (Christians) in Nagaland encourages and support entrepreneurial pursuits by organizing seminars, training, and workshops; this role in the creation and sustenance of entrepreneurs needs empirical evidence to shed light on its relevance in a different context. The relatedness of community depicts human-centered entrepreneurial pursuits. It addresses human values and virtues above the capitalist approach.

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Manuscript received: 13.02.2022

Manuscript received in revised form: 27.07.2022

Manuscript accepted: 01.08.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 18 - 23
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

A Review of Effective Communication and Its Impact on Interpersonal Relationships, Conflict Resolution, and Decision-Making

Dr Ali Ahmad[1+] and Dr. Dababrata Chowdhury[2]

[1] University of Westminster, United Kingdom
[2] University of Suffolk, United Kingdom

Abstract: *The purpose of this research paper is to review effective communication and its impact on interpersonal relationships, conflict resolution, and decision-making in the workplace. In order to address the research topic, this research has been done by a qualitative method. Qualitative research included 10 semi-structured interviews with an average of 25 to 30 minutes. Participants were selected from diverse groups of people, and the average age group was 18-45. The result of this research study included perceptions of effective decision-making, interpersonal relationships, and conflict resolution were linked with the potential application in both the practical and academic fields. In the practical field, the focus was set on making rational decisions, building interpersonal relationships, and resolving conflicts on time. Humans are inherently flawed and biased in information processing. An effective decision mostly depends on the quality of information, and decision-making is one of the most important functions performed by a business leader. The higher the amount of accurate and relevant information a person has, the higher the quality of the decision will be.*

Keywords: Effective Communication, Interpersonal Relationship, Conflict Resolution, Decision-Making.

JEL Code: M10

1. Introduction

Information is the result of processing, manipulating, and organizing data in a way that adds to the knowledge of the receiver. In other words, it is the context in which data is taken. The Oxford dictionary (2015) defines information as knowledge communicated concerning some particular fact, subject, or event of which one is apprized or told, intelligence, or news. Using of right information has a linear relationship to making an effective decision, whether it is an organization or personal life (Ittner & Larker, 2006, Davenport and Harris, 2010). It is essential providing correct and accurate data because most organizations have plenty of data available which to make a decision but complain about drawing in data whilst thirsting for the right information (Herrmann, 2001).

2. Research Elaboration

The research outline of this study is qualitative. Qualitative research focuses on the perception of the individual and his or her experiences. It thereby assesses how people make sense of the world and the underlying concepts and contrasts they use to explain various perceived casualties. A semi-structured interview template was developed following research into interpersonal relationships, conflict resolution, and decision-making in the organization. Dictaphone was used to record the interviews and digital editing software to aid transcription. Data were collected by conducting face-to-face interviews on a one-to-one basis at the participant's place of work. Each participant spent half an hour and frequently asked an average

[1+] **Corresponding Author:** Dr. Ali Ahmad, Phone No: +4407588599988, *Email*: ahmad_rubel@yahoo.com, Address: 51, Ashurst Drive, Essex, United Kingdom. IG6 1EE.

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 18 - 23
URL: http://www.reaser.eu
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of 31 semi-structured questions. All the interview data was collected and transcribed before being submitted to a thematic analysis. The thematic analysis followed the method described by Braun and Clarke, (2006). This involved noting initial ideas throughout the transcription phase and then coding the data and collating the codes for themes. The themes which came out of the initial collation were then reviewed and refined as the researcher went back to the transcripts reading and re-reading to ensure that the themes worked across the entire data set and that each had clear definitions and evidence to support them with any contradictions within the data highlighted for note.

Decision-making is an essential part of the management function. It is the process of choosing what to do by considering the possible consequences of different choices (Brockman and Russell, 2009; Walker, 2001). Flin O'Connor and Crichton, (2008) stated that decision-making is the process of reaching a judgment or choosing an option to meet the needs of a given situation. When the interest of stakes is too important, it quite often happens that people don't sure what to decide, (Bouyssou et al, 2000). Making a decision can be complex because of the large number of factors that influence the decision-making process (Brockman and Russell, 2009). One of the big factor is the quality of information to make a good decision because human is inherently flawed and biased in information processing (Wallace et al, 2003).

An interpersonal relationship is the driving force of our everyday life. Most American report that the quality of their lives is determined by the number and quality of their interpersonal relationship (Tesser & Campbell, 1980). Individuals with good relationships live longer and report less physical and psychological illness and greater satisfaction with life (Duck, 1981). The failure of interpersonal relationships has been associated with suicide (Stech, 1980). Psychiatric problems (Bloom, Asher, and White, 1978), social stress (Chiriboga, 1979), and family instability (Albrecht, 1980) might be happened because of poor interpersonal relationships. Conflict is defined as an incompatibility of goals or values between two or more parties in a relationship combined with attempts to control each other and antagonistic feelings toward each other (Fisher 1990). It is also thought that conflict is a perceived divergence of interest or a belief that the party's current aspiration cannot be achieved simultaneously (Pruit and Robins, 1986). Hart (2002) stated that differing personal values can cause conflict, and segregation in the workplace leads to gossiping and suspicion.

Growing numbers of management experts suggest that emotional intelligence contributes to work performance (Goleman, 1998; Huy, 1999; Mayer et al, 2000). At the same time, some researcher has begun to specifically consider the impact of emotional intelligence on performance in teams (Druskat and Wolff 2001, Jordon et al., 2002). Goleman (1998) also suggested individuals with high emotional intelligence will have superior conflict resolution skills and engage in greater collaboration where emotion is both controlled and generated to develop new solutions that satisfy both parties' needs. Indeed, recent research by Jordon et al. (2002) found a positive link between collaboration as a prepared style of conflict resolution and high individuals emotional intelligence. Jamieson and Thomas, (1974) showed compromise or accommodation was appropriate and acceptable conflict resolution behavior when time and resources are limited, and the issue is not important.

3. Results

The 10 interviews with an average duration of 25-30 minutes, and each interview were analyzed using the analytical framework of the thematic analysis that is introduced by Ely (1991) and Willing (2008). For increasing readability and consistency, longer or combined quotations will be referenced. The category internally inconsistent does not mirror the discrepancy between the two assessments but indicates that the person referred to or displayed both characteristics in self-descriptions in a not consistent manner. The matching of the inconsistency with the differences in the assessment does not seem to be coincidental but an expression of how the inconsistency might have influenced the perception of the interviewer. In this research project total of 10 participants, interviews were taken, and included the Line Manager, deputy manager, team leader as well as customer assistant. In interview 2, decision-making in the workplace was identified as a

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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'main management function'. Management theorists also agree that decision-making is an important function for all management activities. Interviewee 3, stated that an effective decision produces a good outcome, and a wrong decision produces the opposite. To make good decisions, management should work rationally stated in interview 3, and we should get rid of cognitive bias while we make a decision. The topic of decision-making was addressed by the participants in various manners and included interesting concepts and their importance in the organization. Before analyzing the sub-topic, the most common and repeatedly given statements about the importance of decision-making in organizational life.

The quality of information exchange and its accuracy is very important for effective decisions in the workplace. Interview 6, stated that in their workplace quality of information exchange is low, when someone passes information to another person, one shows biases in his information processing because human is fundamentally faulty and prejudiced in information giving out. The main attribute of quality information is solid and faultless information for better decisions in the workplace. In interview 7, stated that some of his employees make accurate information rather than biased information and their judgment is most of the time accurate. On the other hand, interview 10, stated that most of the time, information is manipulated and imperfect in the workplace, and employees interpret information based on their knowledge and experience.

Personality traits are highly correlated with relationship satisfaction. Positive emotionality was related to higher quality relationships in the workplace and low levels of negative relationship outcomes. In an interview 4, stated that 'positive emotionality' helps to build good relationships in the workplace. The extroverts were mostly described as strong in the area of communication while sometimes being a little rougher' or even very aggressive. On the other hand, introverts are described as someone who are calm, cool, and reflective. This was also introduced in the statement concerning 'quitter people' and 'not really outgoing'. Emotional stability was described as a 'leadership' trait, and neuroticism was described as an 'aggressive' and 'non-leadership' personality type. Conscientiousness traits were thought of as a 'deep thinker and 'articulate' in their work. Conscientious people make a 'deep relationship' in the workplace, and they are 'trustful'. Conflicts were mostly described by participants' incapability of goals or values between two or more parties in a relationship combined with attempts to control each other. In interview 6, they stated that perceived 'divergence on interest' or 'belief' differs from others' opinions. Conflict is also stated as a 'fact of life' in interview 6, and dealing with conflict is a 'great challenge' to management.

Therefore, the probability of conflicts arising is very high. Conflicts have both positive and negative outcomes for the individual's employees and organizations at large. There is no source of conflict, which occurs in organizations at all levels of management. The main reason behind workplace conflict is differences in 'personality' stated in interview 1. Furthermore, participants described the causes of conflict as 'poor communication', and 'poor work environment'. Participants also described the 'unfair workload' stated in interview 10, and 'bullying and harassment, as major causes behind the conflict. In interview 7, they stated that an 'unresolved problem' from the past was the reason for conflict.

Personality affects an individual choice of conflict strategy through various motivational, cognitive, and affective processes. For example, people with different personalities may have different motivations and thus use different conflict strategies because they value and seek different outcomes in the conflict situation. People tend to experience more positive affect when they engage in behaviors that are compatible with their personality and, therefore may find the use of some conflict strategies more rewarding than others. Most of the participants agreed that emotionally intelligent and conflict resolution have a direct positive link. Emotionally intelligent people have 'superior conflict resolution skills' stated in interview 4, and acceptable 'conflict resolution behavior' stated in interview 8. Indeed, positive link between collaboration as a prepared style of conflict resolution and high individuals' emotional intelligence. Compromise or accommodation was appropriate and acceptable conflict resolution behavior when time and resources are limited and the issue is not important.

ISSN: 2247-6172
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4. Discussion

Decision-making is a vital part of the management function. Even a low-level supervisor makes several decisions in a workday. In this research project, decision-making and its accuracy are being studied, and how different types of intellectual predispositions influence decisions is explained. The fact that one participant acknowledged that their decision-making process is not accurate. When management makes any decision, most of the time, they do groupthink or conformity. This shows that their decision-making is not accurate. Another participant described that when they make a decision, most have the time, the quality of information exchange is not correct, or information is distorted. Therefore, decision-making can be complex because of the large number of factors that influence the decision-making process (Brockman and Russell, 2009).

Interpersonal relationships are the driving force of our everyday life. Individuals with good relationships live longer and report less physical and psychological illness and greater satisfaction with life (Duck, 1981). One participant said that his interpersonal relationships are not good. He finds it difficult to share feelings with his colleague. One of the main components of better communication among colleagues is active listening. One participant described that top management individuals very rarely listen to them. Personality traits are most highly correlated with relationship satisfaction. Agreeable individuals are described as compassionate, flexible, fair, generous, and considerate. In the interview, one participant described those positive personalities, such as openness to experience, agreeableness, and conscientious people make a stronger relationships in the working place. On the other hand, introversion and neuroticism traits are very difficult to approach. Conflict is generally regarded as disengagement regarding interests and ideas (Esquivel and Kleiner, 1997). One participant described that he has conflicts in the workplace. Most of the time his attitude and opinions are not similar to his colleague. Another participant described that conflict sometimes brings positive effects in the workplace. However, Hocker and Wilmot, (1995) stated that people tend to view conflict as a negative force, but conflict often leads to positive effects, such as improving the quality of the decision, and Knippen and Green, (1999) stated that resolved conflict could increase organization performance.

Personality traits are one of the most important determinants of the conflict management process. Most of the participants agreed that personality traits also could contribute to better conflict resolution, quality decisions, and better interpersonal relationships. One participant described that neurotic's people are very aggressive and difficult to approach. On the other hand, the open and agreeable people are very warm and kind. Emotionally intelligent people can handle conflict in any situation. This type of person is self-aware and empathetic. Goleman (1998) also suggested individuals with high emotional intelligence will have superior conflict resolution skills and engage in greater collaboration where emotion is both controlled and generated to develop new solutions that satisfy both parties needs.

5. Conclusion

Effective communication is vital for maintaining interpersonal relationships, resolving conflicts in the workplace, and improving decision-making. It is found that positive interpersonal relationship depends on effective communication, causes of interpersonal conflicts are personality traits, and people with higher emotional intelligence have higher conflict resolution skill, and they can maintain a positive interpersonal relationship in the workplace. On the other side, effective communication has a linear relationship with appropriate decision-making. When the information process is wrong, the individual perceives things wrongly, and communication becomes ineffective. Thereby, wrong information exchange leads to poor communication, and poor communication triggers wrong decisions. Thus, quality information exchange requires effective communication and effective communication helps individuals to take accurate decisions.

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6. Acknowledgement:

I owe a great debt of gratitude, enormous personal thanks, and acknowledgment, which goes to Dr. Dababrata Chowdhury for his dedication, kind support, and research activity jointly.

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Manuscript received: 16.03.2022

Manuscript received in revised form: 26.10.2022

Manuscript accepted: 01.11.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 24 - 45
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Fintech and Islamic Banks - an integrative model approach to predict the intentions

Hasnan Baber[1+] and N M Baki Billah[2]

[1] Assistant Professor of Management, Abu Dhabi School of Management, Abu Dhabi, UAE

[2] Senior Lecturer, School of Business, University of Liberal Arts Bangladesh (ULAB), Bangladesh

Abstract: *The study is aimed to examine the intentions of people in Bangladesh to use and adopt FinTech services offered by Islamic Banks. The study has integrated two widely used intentional models- the technology acceptance model and the theory of Planned Behavior along with the Shariah compliance factor for Islamic banks. The data was collected from 342 respondents from various parts of Bangladesh, like Dhaka, Khulna, Chittagong, Mymensingh, Rangpur, and Rajshahi divisions. The data were analyzed using the partial least square structural equation modeling (PLS-SEM) using the SmartPLS software. The study confirms the positive influence of perceived usefulness and perceived ease of use, along with Shariah compliance, on attitudes toward FinTech services. Further attitude toward FinTech services and other factors of the Theory of Planned Behavior has a positive relationship with the intention to adopt FinTech services. The study will be important for researchers to integrate the behavioural and cognitive intentional models for examining the intentions to adopt FinTech services. The study also confirms the role of Shariah compliance factors when studying the customer behaviour of Islamic banks and institutions. The study is the first to integrate the two models, and the Shariah compliance construct to investigate the intention to adopt FinTech services in Bangladesh.*

Keywords: FinTech; Intention; Shariah; Islamic; Banks; Bangladesh

JEL codes: O14; O33; O35

I. Introduction

Literature in recent times delineated that traditional incumbents exhibited agility in changing the mode of providing banking needs to their customers cost-effectively and efficiently, which was primarily led by Financial Technology (Fintech) revolution (Gomber et al., 2018; Kotarba, 2016; Siddik et al., 2014). However, limited studies were conducted to address consumer adoption and their perception of Fintech products and services (Bureshaid et al., 2020). FinTech has thrived by upholding a profound understanding of the client. These companies have evolved by unrelentingly developing innovative customer-centric solutions with a strong distinguishing value proposition at the same time as traditional service delivery firms have lost their grip (Riemer et al., 2017). It is not uncommon to use innovative technology in the finance industry. But, Fintech has become a widely discussed topic only in the last decade because of its disruptive influence on designing applications to meet the demand of the modern era. After the Global Financial Crisis in 2008, many Fintech startups were born out to meet the financial needs of aggrieved customers who had valid reasons to mistrust the conventional banking system. Furthermore, higher smartphone penetration accompanied by better access to novel technologies induced customers to opt for alternative financing

[+] **Corresponding Author**: *Email*: h.baber@adsm.ac.ae

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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opportunities. Hence, the Global Financial Crisis in 2008 has long been credited as a catalyst for the rapid rise of Financial Technology (Arner et al., 2015; Cortina Lorente et al., 2018).

The "Fintech " term was unfolded as the adoption of emerging information technology in the financial service industry (Yoon et al., 2016; Gomber et al., 2018). Nakashima (2018) provided some examples of emerging technologies, such as big data, the Internet of Things, and cloud computing, shaping existing products and services. In the meantime, Arner et al. (2015) documented the origin of the deeply rooted relationship between conventional financial services and information technology and believed Fintech startups rather than traditional financial institutions should be credited for being at the forefront in spurring the growth of radical innovation to deal with the substantial change in customer-centric demand. FinTech firms have been stimulating and expanding the ambit of financial inclusion through financing underdeveloped areas in some countries like agriculture (Hudaefi, 2020). Schueffel (2016, p. 45) attempted to propose the most common definition of "Fintech" after reviewing commonalities of the definitions in 200 scholarly articles, and the definition reads approximately as follows:

"Fintech is a new financial industry that applies technology to improve financial activities."

Nevertheless, the lack of consensus on the absolute definition of Fintech persists due to the extreme pace of innovation in the Fintech industry and also because this is a cross-sector sensation (Schena et al., 2018; Milian et al., 2019).

Islamic Fintech, recently termed as i-FinTech (Chong, 2021), is a newly devised term, and researchers found no deviation from Fintech, provided that Fintech technologies were adopted following Shariah (Islamic Law) principles (Usman et al., 2021). Moreover, Alaa and Mirakhor (2017) asserted that Fintech is more connected to the spirit of Sharia as it eliminates two major risks, uneven maturity and leverage. Since 2010, the Islamic Finance Industry has grown rapidly, reflecting the evolution of the vast global Fintech Ecosystem with the aim of designing Islamic-faith-based products and services.

Global Islamic Financial Assets are projected to grow to USD 3.5 trillion in 2024. Several banks offering Islamic Banking windows have sharpened their focus on Fintech to thrive in the future by revolutionizing existing products and services. To remain unscathed as a conventional Islamic Financial Institution, the need for Fintech adoption is of paramount importance (World Bank, 2020). By 2030, the Global Muslim Population is estimated to represent 26.4 percent of the world's total population. Bangladesh will likely remain the fourth-largest Muslim-populated country in 2030; by then, Bangladeshi Muslims are projected to comprise approximately 11.7 percent of the total Global Muslim Population (Grim & Karim, 2011). To tap into this monumental possibility, Islamic Finance Industry must embrace the Islamic Fintech ecosystem as a solution to reap the maximum level of benefit (World Bank, 2020). This was also noted by Rabbani et al. (2020), and the authors advocated that the recent trend in the Financial Industry has left Islamic Financial Institutions no choice other than to embrace FinTech as a way to increase efficiency, transparency, and customer satisfaction. Conventional finance has a higher number of FinTech users than Islamic finance, so to gain and maintain competitiveness, Islamic banks need to offer such services earliest (Baber, 2019). As innovative technologies are being used to provide convenience in the conventional financial sector, so should

ISSN: 2247-6172
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be employed by Islamic banks for their customers to set themselves apart from traditional banks (Usman et al., 2021). Baber (2020a, 2020b) suggests that FinTech service is essential for the retention of customers in Islamic banks.

This study aims to shed some light on the current research gap between academics and practitioners to comprehend the paradigm shift in financial services led by Fintech innovation, specifically in Islamic Finance industry. In this study, we have referred to Fintech to address recently devised technological applications such as digital financial services offered by the most popular Shariah-based financial institutions in Bangladesh. We are examining the intention of people to use the Fintech services offered by Shariah-based financial institutions through the theory of planned behaviour (Cognitive model) and technology acceptance model (behavioural model). This study will be the first study that will check the intentions by integrating these two most widely-used models. We are also adding a Shariah compliance factor to check the influence on the attitude towards fintech services to make it relevant to Islamic banks. As far as the accessibility of financial services to unbanked people is concerned, this study will help policymakers in Bangladesh assess how successfully financial institutions have been able to encompass a significant proportion of the population under the umbrella of basic banking services with the aid of emerging technologies. Needless to say, the recent pandemic crisis of COVID-19 has been working as a catalyst to accelerate the rapid development of digital financial services around the globe and particularly in Bangladesh. The brunt of the COVID-19 crisis has changed the industry dynamics of financial services and guided consumers' acceptance of digital financial services. According to data provided by the Central Bank of Bangladesh, the total volume of transactions using mobile phones in September 2020 exhibited stellar growth and was recorded at Tk 491.21 billion, which grew at a 152 percent rate from 194.71 billion in September 2016. Thus, policymakers need to understand the consumer attitude and behavioural intention toward digital financial services as a pragmatic instrument that might provide some help (if employed efficiently) to recover the economy from the COVID-19 crisis2.

II. Literature review

Technology acceptance model (TAM)

Davis (1986,1989) proposed Technology Acceptance Model (TAM) in his doctoral dissertation based on the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1977) to predict and explain user adoption of new technology using two constructs, namely, perceived usefulness (PU) and perceived ease of use (PEU). The model indicates that behavioural intention to use technology is determined by attitude, which is influenced by PU and PEU (Davis, 1989; Belanche et al., 2019; Joo, 2017; Baber, 2021).

Since then, the TAM model has been proven by scholars as a highly predictive (Szajna, 1996) and adaptive (Mathieson, 1991) model to study the user adoption of various technologies. Meanwhile, a meta-analysis of the TAM found that the model is robust (Ma & Liu, 2004), and it has been extensively used to explain how emerging technologies are accepted and used (Zhang et al., 2018). A significant number of studies have employed the TAM model to study the behavioural intention towards the usage and acceptance of

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Fintech Applications (Susilo et al., 2019) and Fintech Service (Chuang et al., 2016; Kim et al., 2015; Folkinshteyn & Lennon, 2016) in their study. These studies pronounced TAM as an invaluable framework to look at aspects of the novel technology [i.e., bitcoin and blockchain-related technologies] acceptance and adoption process from the perspective of different stakeholders. Thus, the theoretical framework of TAM can be applied to Fintech to illustrate the concept of Fintech adoption, as mentioned in the literature (Hu et al., 2019).

Theory of Planned Behavior (TPB)

In addition to the TAM model, we have also used the Theory of Planned Behavior (TPB) to form our conceptual framework. Ajzen (1991) proposed the TPB model to address the shortcomings of TRA in understanding behaviour, especially in people who have little to no control over their actions. Therefore, a new construct called "Perceived Behavioral Control (PBC)" was incorporated into the TRA model. According to the TPB model, attitude, subjective norm and perceived behavioural control are all direct determinants of behavioural intention, which influences the performance of a given behaviour (Ajzen, 1991)

The comparative analysis between TAM and TPB (Mathieson, 1991) found that TAM was marginally stronger in explaining model variance designed to predict a user's intention to adopt a technology. Additionally, TAM was proposed as the appropriate model in a study where the attitude toward the adoption of technology is of greater importance. More recent evidence (Sanayei & Bahmani, 2012) highlighted TAM as the superior model to both the TRA and TPB to explain individuals' acceptance and usage of internet banking. The reason TAM is superior is that it uses only two constructs (PU and PEU) that can be applied to any technology adoption situation.

Hypotheses Development

Perceived usefulness

In the TAM model, perceived usefulness (PU) is the first belief which is defined as the degree to which an individual's productivity would increase if he/she uses new technology (Davis, 1989). As Folkinshteyn and Lennon (2016) found, PU has a positive influence on the adoption of Fintech services, which is consistent with previous research by Ryu (2018). Akturan and Tezcan (2012) also revealed a significant connection between PU and new technology adoption in the banking sector. In this study, the term "perceived usefulness" alludes to the fact that consumers will embrace Fintech products and services if they feel that using them will influence their task performance (Irum et al., 2018; Venkatesh, 2000).

H1: Perceived usefulness has a positive relationship with attitude toward Fintech services

Perceived ease of use

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Perceived ease of use (PEU), as the second belief, refers to the degree to which an individual perceives using the new technology would require minimal effort (Davis, 1989). In general terms, "perceived ease of use (PEU)" can refer to the fact that Fintech products and services would be adopted by consumers if they are user-friendly and take little effort to learn how to use (Hu et al, 2019; Sek et al, 2010). Evidence from previous studies suggests that PEU has a significant impact on consumers' adoption of Fintech products and services (Jiwasiddi et al., 2019; Riquelme & Rios, 2010).

Riquelme and Rios (2010) looked into the factors that most affect behavioural intention to use mobile banking services and discovered that PU is the most important factor, while PEU is more important for female respondents than for male respondents. Chuang et al. (2016) reported that consumers' attitudes about using Fintech products and services would be impacted by their understanding of how convenient and useful it is to use Fintech products and services. Raza et al. (2017) also confirmed that PU and PEU are the key determinants of new technology adoption. Based on arguments, the following hypothesis was formed:

H2: Perceived ease of use has a positive relationship with attitude toward Fintech services

Shariah compliance

The aim of Shariah law in the Islamic financial system is to keep the Muslim population morally upright by governing what activities are acceptable and which are not (Todorof, 2018). To explain the importance of Shariah compliance in Islamic banks, Lee and Ullah (2011) contended that Shariah compliance is an essential element for Islamic bank customers in Pakistan, customers are more likely to close their accounts with a bank if is found to be consistently breaching Shariah laws. In an Islamic Bank, religious factors should take precedence over other factors, and all of its functions should comply with Shariah law (Khan et al., 2007; Manzoor et al., 2010). Several studies in the past, for instance, Usman et al. (2017), Dusuki and Abdullah (2007), and Mulia et al. (2020) confirmed that customers' decision to use Islamic banking products and services is influenced by their religious beliefs. As a result, Shariah compliance is deemed as an important variable to consider while researching the technologies employed by Islamic banks (e.g., e-banking and m-banking) (Usman et al., 2021; Mulia et al., 2020). Hence, the following hypothesis was suggested based on the studies:

H3: Shariah compliance has a positive relationship with attitude toward Fintech services

Attitude

The term "Attitude" towards a specific behaviour refers to the degree to which the performance of a behaviour is judged with favorableness or unfavorableness (Ajzen, 1991). The key antecedent of intention to adopt new technology is the attitude toward it, which then influences the actual use of the technology (Aboelmaged & Gebba, 2013). Researchers in the past carried out studies in a variety of domains and confirmed attitude as a significant predictor of behavioural intention in embracing new technology (Joo,

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2017; Püschel et al., 2010; Safeena et al., 2013). For instance, Shaikh and Karjaluoto (2015). revealed a systematic review of 55 studies in the field of m-banking published between January 2005 and March 2014 to investigate behavioural theories employed by various researchers to predict user adoption. According to their results, users' intentions to use m-banking services in developed and developing countries are greatly influenced by their attitudes. Furthermore, Belanche et al. (2019) revealed attitude as the dominant predictor of behavioural intention to use Robo-advisors in the finance industry. Chuang et al. (2016) investigated consumers' intention to use fintech services and found that attitude has a substantial positive impact on behavioural intention. Based on the above studies, we have developed the following hypothesis:

H4: Attitude has a positive relationship with intention to use Fintech services

Subjective Norm

Subjective norm is defined by Sanayei and Bahmani (2012) to refer to an individual's perception of the social pressure to engage in or refrain from engaging in a particular behaviour, which is influenced by the individual's referent group. Consistent with (Taylor & Todd, 1995), Venkatesh and Davis (2000) tested the extended TAM model using longitudinal data and revealed a positive relationship between subjective norm and usage intention. Recent research on this topic by Belanche et al., (2019) found that the impact of social perceived pressure on consumers adopting emerging technologies [i.e., Fintech] is particularly relevant as they lack personal familiarity with the novel technologies and hence are influenced by the referent groups. Meantime, Niswah and Legowati (2019) investigated the factors that influence Muslim millennials' willingness to use Fintech to donate to charity works. According to the study's findings, the subjective norm is a strong determining factor in millennials' intention to use Fintech, probably because they get influenced by the group of people whose opinions are abetting. The result of the study is in line with (Kim et al., 2016). Several studies in a wide range of fields confirmed that subjective norms significantly influence behavioural intention to embrace new technology (Belanche et al., 2019; Joo, 2017; Safeena et al., 2013). On the contrary, Shaikh et al. (2020) believed that subjective norm does not affect user acceptance of Islamic Fintech, but based on their analysis of 205 respondents from Klang Valley, Malaysia, the authors failed to provide an adequate reason for this finding. Thus, we formed the following hypothesis:

H5: Subjective norm has a positive relationship with intention to use Fintech services

Perceived Behavioral Control

In the literature of Ajzen (1991) and Taylor and Todd (1995), Perceived behavioural control usually refers to an individual's understanding of his or her capacity and constraints to perform a specific behaviour. Adequate resources available to implement technology, as well as the appropriate skill set to use the technology, encourage users to accept it (Niswah & Legowati, 2019). It has been suggested that perceived behavioural control has a positive relationship with the intention to use new technology in several studies

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conducted in a variety of domain (Joo, 2017; Safeena et al., 2013; Sanayei & Bahmani, 2012). In light of the above studies, the following hypothesis was suggested:

H6: PBC has a positive relationship with the intention to use Fintech services

III. Methodology

The data was collected from various parts of Bangladesh like Dhaka, Chittagong, Rangpur, Mymensingh, Rajshahi, Khulna, and Barisal divisions. Around 342 respondents participated in the survey. The two-stage sampling method was used to gather the data. First, divisions were selected based on convenience, and then a snowball sampling approach was used, as the survey was shared within the professional and social networks who have an Islamic bank account, who forwarded it further in their network. To make sure that only customers of Islamic banks should participate in the survey, we asked questions like "How are you related to Islamic Banking?" and "What is the reason for choosing Islamic banking over the other options?".

The majority (56.7%) of the respondents fall in the age group 26-35, 21.1% were within the 18-25 age group, 13.5% were between 36-45, and there were around 9% between 46-65 years of age. The sample is mostly dominated by male respondents (75%) as compared to 25% of female respondents. The reason may be that only 36% of females have bank accounts, and 65% of males out of the whole population have bank accounts in Bangladesh, as per the Findex report 2017 (Baber, 2019). The sample is educated as 90% of the sample has at least a Bachelor's degree which makes them more inclined towards using financial technology. The sample has a balanced income distribution group, which is good for understanding the intentions among all the income groups of customers. Around 90% of participants use mobile devices regularly and only 2% of the population uses them rarely.

Table 1. Demographic details

Demographic variable	Options	Frequency	Percentage
Gender	Female	87	25.4
	Male	255	74.6
Age	18-25 years	72	21.1
	26-35 years	194	56.7
	36-45 years	46	13.5
	46-55 years	22	6.4
	56-65 years	8	2.3
Educational Level	HSC/ "A" level or equivalent	29	8.5
	SSC/ "O" level or equivalent	2	.6
	Bachelor's Degree	136	39.8
	Master's Degree	171	50.0

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	PhD or higher	3	.9
	Prefer not to say	1	.3
Income	Less than BDT 300,000	93	27.2
	BDT 300,001 - BDT 500,000	50	14.6
	BDT 500,001 - BDT 700,000	42	12.3
	BDT 700,001 - BDT 900,000	24	7.0
	BDT 900,001 - BDT 1000,000	19	5.6
	Above BDT 1000,000	40	11.7
	Prefer not to say	74	21.6
Use of Mobile Device	Rarely	7	2.0
	Sometimes	36	10.5
	Often	64	18.7
	Mostly	235	68.7

IV. Results and analysis

The data were analyzed using the partial least square structural equation modeling (PLS-SEM) using the SmartPLS software. In the initial phases of theory development, PLS-SEM is more useful in assessment and model development. It is also helpful in testing the data which lack normality and when the model is complex (Hair Jr et al., 2020). The seven constructs used in the model were adopted from past studies. The items of TPB constructs- attitude are taken from Hu et al. (2019), and subjective norm and perceived behavioural control are taken from Mutambara (2019). The items of TAM constructs- perceived usefulness and perceived ease of use are taken from Hu et al. (2019). The items of shariah compliance were taken from (Baber, 2021) and behavioural intention from Hu et al. (2019) and Baber (2020c). The factors in the proposed model are shown in Figure 1. Some previous studies have integrated these two models- TAM (Technology acceptance perspective) and TPB (social-psychological perspective) for predicting the intentions to use fintech services (Hu et al., 2019; Fianto et al., 2020), however, this first study examines the same in Islamic banks in Bangladesh.

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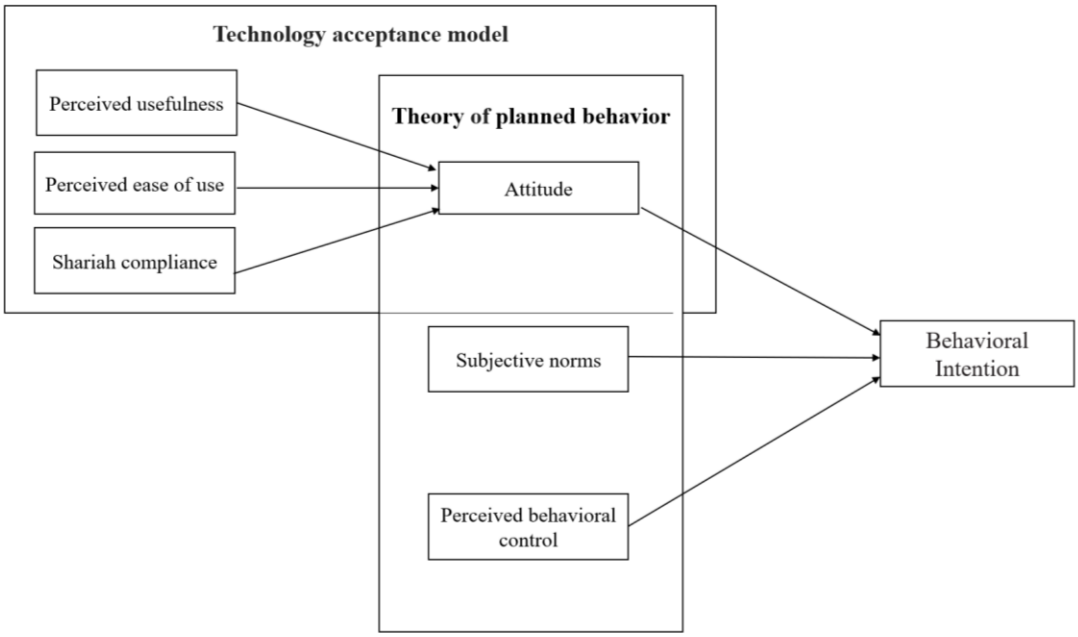

Figure 1. Research Framework

The factor loadings of all seven constructs were assessed as shown in Table I. All the factor loadings values are above the minimum acceptable value of 0.70 (Hair et al., 2019). The reliability of the items was assessed through Cronbach's alpha and composite reliability. All values range above 0.7, which is the recommended standard value, hence reliability of data was confirmed (Hair et al., 2019), as shown in Table 2. To test the convergent validity of data, AVE (average variance extracted) was measured, all the values were higher than the acceptable value of 0.50 (Hair et al., 2019). The confirmation AVE (average variance extracted) signifies that items measure their corresponding construct, which it is meant to estimate.

Table 2. Measurement of Model

Item Code	Item	Factor Loading	Alpha	CR	AVE
Perceived usefulness			**0.889**	**0.923**	**0.751**
PU1	Using Fintech can meet my service needs.	**0.845**			
PU2	Fintech services can save time.	**0.905**			
PU3	Fintech services can improve efficiency.	**0.829**			
PU4	Overall, Fintech services are useful to me.	**0.886**			
Perceived ease of use			**0.830**	**0.898**	**0.746**
PEU1	It is easy to use Fintech services.	**0.883**			

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PEU2	I think the operation interface of Fintech is friendly and understandable.	**0.859**			
PEU3	It is easy to have the equipment to use Fintech services (cellphone, APP, WIFI, et al.).	**0.848**			
Shariah compliance			**0.876**	**0.924**	**0.801**
SC1	Fintech services should be compliant with Shariah regulations.	**0.892**			
SC2	Fintech services should be without riba (interest) and unlawful profit.	**0.878**			
SC3	Fintech services should be as per the Shariah laws and regulations.	**0.916**			
Attitude			**0.874**	**0.922**	**0.798**
ATT1	I believe using Fintech services will be a good idea.	**0.902**			
ATT2	Using Fintech services will be a pleasant experience.	**0.898**			
ATT3	I am interested in Fintech services.	**0.881**			
Subjective norms			**0.884**	**0.928**	**0.812**
SN1	People important to me think that it would be fine to use fintech services.	**0.900**			
SN2	People whose opinions are valuable to me would prefer that I use fintech services.	**0.907**			
SN3	People who are important to me would be in favour of using fintech services.	**0.896**			
Perceived behavioural control			**0.899**	**0.925**	**0.713**
PBC1	I will be able to use fintech services.	**0.858**			
PBC2	I have sufficient knowledge to use fintech services.	**0.844**			
PBC3	I have a sufficient extent of self-confidence to make a decision to adopt fintech services.	**0.892**			
PBC4	Using fintech services is entirely within my control.	**0.728**			
PBC5	I have the resources, knowledge and ability to use fintech services.	**0.889**			
Behavioural Intention			**0.851**	**0.910**	**0.770**
BI1	If I have used Fintech services, I am willing to continue using them.	**0.898**			
BI2	I would like to use Fintech services soon.	**0.854**			
BI3	I will recommend Fintech services to my friends.	**0.881**			

To further test the divergent validity of the items, Fornell-Larcker criteria were used, as shown in Table 3. Divergent validity means that each item measures a different construct from the other different items. The square root of all values of AVEs is higher than the correlation between constructs; therefore, divergent

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validity is established (Fornell & Larcker, 1981). Again, HTMT (heterotrait–monotrait) ratio further supports divergent validity as all values are below the threshold maximum value of 0.85 (Henseler et al., 2015).

Table 3. Fornell-Larcker criterion

Constructs	PU	PEU	SC	ATT	SN	PBC	BI
Perceived usefulness (PU)	0.867						
Perceived ease of use (PEU)	0.770	0.864					
Shariah compliance (SC)	0.449	0.433	0.895				
Attitude (ATT)	0.810	0.710	0.502	0.893			
Subjective norms (SN)	0.643	0.567	0.344	0.709	0.901		
Perceived behavioral control (PBC)	0.692	0.672	0.441	0.820	0.713	0.845	
Behavioral Intention (BI)	0.714	0.665	0.461	0.804	0.703	0.825	0.878

All hypothesized relationships were tested using the PLS-SEM approach and all relationships in the proposed model were significant. We find the positive effect of Perceived usefulness on attitude (β: 0.603), Perceived usefulness on attitude (β: 0.179), Shariah compliance on attitude (β: 0.153), Attitude on intention (β: 0.332), Subjective norms on intention (β: 0.149), and Perceived behavioural control on intention (β: 0.446). The majority of path coefficients are statistically significant at 1% and 5% significance levels, as shown in Table 4. Therefore, we accept all our hypotheses. To check the indirect relationships, we found a positive influence of Perceived usefulness, Perceived usefulness, and Shariah compliance on intention through attitude. Therefore, attitude mediates the relationship between the three constructs and intention. The R2 values of attitude and intention are 0.693 and 0.740, respectively, as shown in Figure 2. This indicates that 69% of the variance in attitude towards FinTech services is explained by the TAM constructs and Shairah compliance construct in the case of Islamic banks. Also, the 74% variance in the intention is explained by the two models- TAM and TPB integrated into this study.

Table 4. Estimated hypothesized relationships

Hypotheses	Path Relationship	β	T-value	P-Values	Remark
H1	Perceived usefulness →Attitude	0.603	10.989	0.000	Supported
H2	Perceived ease of use →Attitude	0.179	3.344	0.001	Supported
H3	Shariah compliance →Attitude	0.153	4.440	0.000	Supported
H4	Attitude →Behavioral Intention	0.332	5.983	0.000	Supported
H5	Subjective norms → Behavioral Intention	0.149	3.305	0.001	Supported
H6	Perceived behavioural control → Behavioral Intention	0.446	7.543	0.000	Supported

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Table 5. Indirect Path Relationship

Path Relationship	β	T-value	P-Values
Perceived usefulness → Attitude →Behavioral Intention	0.200	4.938	0.000
Perceived ease of use → Attitude →Behavioral Intention	0.060	2.920	0.004
Shariah compliance →Attitude → Behavioral Intention	0.051	3.701	0.000

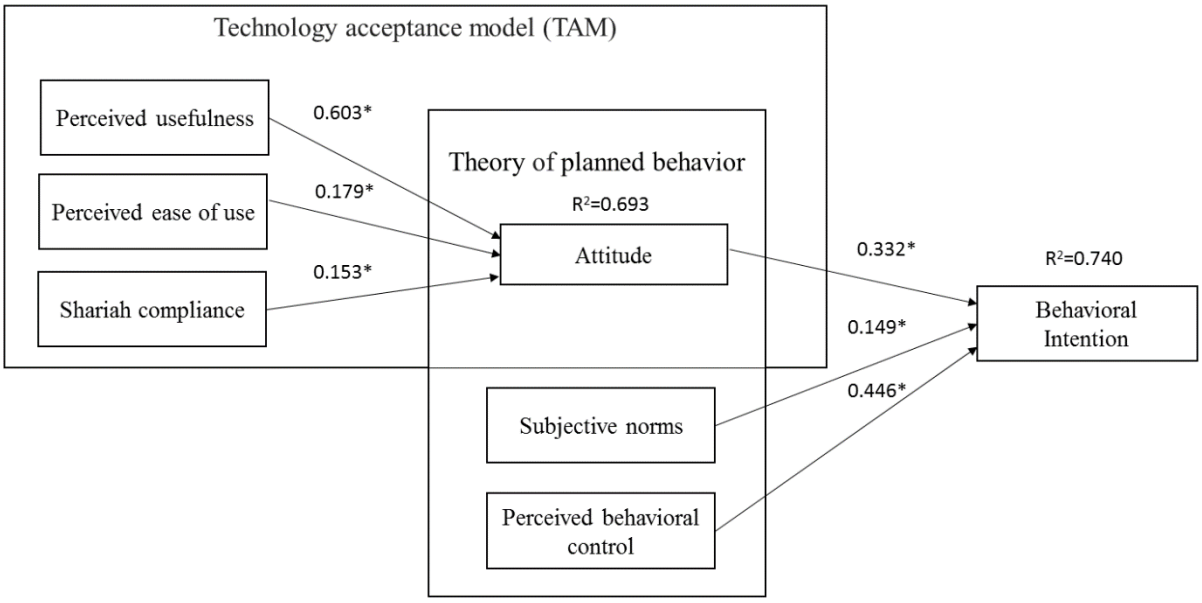

Figure 2 Path Estimations

Although some researchers advocate the use of the PLS-SEM approach for model fit, however, we should be cautious while applying measures to test the Goodness-of-fit(Hair et al., 2019). So to confirm the fitness of the model, we used Amos 22 to test it. Various indices e.g. Chi-square, Goodness-of-fit index (GFI), Adjusted Goodness-of-fit index (AGFI), Comparative Fit Index (CFI), Root mean square residuals (RMSR), Root mean square error of approximation (RMSEA), TLI (Tucker Lewis Index), Normed Fit Index (NFI), and Parsimony normed fit index (PNFI) were estimated. All the indices signify the goodness-of-fit to the data for the proposed structural model as shown in Table 6.

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Table 6. Goodness-of-fit estimation

Fit index	$\chi 2$/df	GFI	AGFI	CFI	RMSR	RMSEA	TLI	NFI	PNFI
Recommended value (Hair *et al.*, 2010)	<3	>0.85	>0.80	>0.90	<0.10	<0.08	>0.90	>0.90	>0.60
Structural model	2.745	.872	.834	.937	0.052	.072	.926	.906	.761

V. Discussion

The purpose of this study, which used TAM and TPB models, is to understand better the effects of conventional antecedents (such as perceived usefulness, perceived ease of use, attitude, subjective norm, and perceived behavioural control) combined with an external construct (i.e., Shariah compliance) in predicting customers' acceptance of Fintech services. The research results show that all the hypotheses are supported.

Perceived usefulness and perceived ease of use have a significant positive influence in interpreting attitudes towards the use of Fintech services, and they also have a significant indirect effect on behavioural intention to adopt through attitude. Several researchers in the past reported that perceived usefulness has a greater impact on attitudes toward the acceptance of new technology when compared with perceived ease of use (Aboelmaged & Gebba, 2013; Hu et al., 2019; Raza et al., 2017). However, the result of this research provides interesting insight into the significance of perceived ease of use at the early adoption stage, which was highlighted by (Ashraf et al., 2014; Belanche et al., 2019).

At present, in Bangladesh, customers are encouraged to interact with their respective banks using Fintech solutions as banks have reduced operating hours following movement restrictions to prevent the spread of coronavirus. Most banks showcased their agility and efficiency in promoting their user-friendly Fintech solutions, emphasizing the numerous benefits of adopting them. Throughout the recent pandemic, several banks carried out campaigns with positive messages and tutorials to familiarize their digital solutions, suggesting an increased number of informed users. Customers also preferred digital banking platforms to branch-based banking to avoid being infected with the coronavirus (Uddin, 2021). Thus, this behavioural shift among customers may explain why these two factors are strongly predictive.

Previous studies (Lu et al., 2005; Vijayasarathy, 2004) allowed researchers to incorporate an additional variable to increase the predictive power of TAM. In the meantime, (Usman et al., 2021) revealed the importance of incorporating Shariah compliance as an external variable when studying Islamic Financial Institutions. This study shows that Shariah compliance has a significant impact on customers' attitudes toward Fintech adoption. Islamic banks in Bangladesh have been able to achieve stellar growth over the previous three decades despite fierce competition from conventional counterparts primarily because of

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increased demand for Shariah-compliant products and services driven by the Muslim majority population's religious sentiment. Therefore, Shariah-compliant Fintech services can provide a competitive edge to Islamic Banks as they are still struggling to deliver the same infrastructural support as their traditional counterparts. Needless to say, Islamic banks should focus on making their Fintech services Shariah-compliant to reassure their distinctiveness from their competition.

The finding of this study related to the subjective norm is in congruence with the study (Belanche et al., 2019), which implies that customers may seek information from their referent groups to embrace new technology; hence the subjective norm positively influences behavioural intention. In Bangladesh, the COVID-19 pandemic worked as a catalyst to create hype about digital financial services. People were encouraged to explore digital financial services due to favourable policy support from regulators and the Government's spot-on decision regarding disbursing financial aid through a leading mobile financial service provider("Prime Minister Inaugurates Cash Aid for 3.6 Million COVID-19 -Affected Families," 2021). Consequently, consumers were more confident in the system and encouraged others to use digital financial services.

The results of this study show that perceived usefulness, perceived ease of use and shariah compliance also affect behavioural intention mediated by attitude. Our study supports the view that attitude can be used as a mediating variable to assess the behavioural intention of consumers to embrace products and services offered by Islamic banks (Kaakeh et al., 2019; Zhang et al., 2018).

Perceived behavioural control significantly affects behavioural intention when users feel they lack the resources and skillsets required to use the technology. Thus, the finding of the study supports the fact that the recent development of Fintech services in Bangladesh is in the early adoption stage (Ashraf et al., 2014), and it also indicates that surveyed respondents had less confidence in adopting Fintech services (Mazambani & Mutambara, 2019).

VI. Conclusion and recommendation

With the evolution of technology, access to financial services has become so convenient and easy. As more services are delivered through FinTech services, its adoption and acceptance by the customers were the focus of this study.

According to data obtained from Bangladesh Bank, there are 13 banks involved in mobile banking services. Introducing new resources and cutting-edge technology, the country's mobile banking service providers witnessed astounding 13.4 percent growth in the number of registered customers over a year, bringing the total number of registered customers to 114 million (approx.) at the end of January 2022.[3]

Due to the Covid-19 pandemic shutdown, which made branch banking a formidable challenge, it has been observed that people now find digital banking to be more convenient than branch-based transactions. Banks

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have poured a bundle of new services into their mobile apps, including the payment of various bills, the disbursement of government benefits, remittance transactions, and donations.

It is conspicuous that fintech adoption in Bangladesh is on the rise. To understand why people in Bangladesh are so enthusiastic about Fintech, the paper examined the traditional antecedents, such as perceived usefulness, perceived ease-of-use, attitude, subjective norm, and perceived behavioral control, along with Shariah compliance as an external construct. The authors believe that this employed research model can be used by Fintech professionals to better understand their target customers and execute prudent marketplace practices.

This study explores to understand to what extent Fintech services should comply with Shariah objectives in a Muslim-majority country like Bangladesh. One of the leading mobile financial service providers in Bangladesh has recently received a lot of attention thanks to the availability of Shariah-compliant financial services.[4] Due to customer demand for Shariah-compliant products after the pandemic, Malaysia has also seen remarkable growth in the Islamic Fintech industry.[5] As stated by (Mulia et al., 2020), customers are more likely to return to Islamic banks if they believe they are conforming to Shariah principles since they feel more connected to the institutions and don't need to seek out other banks' services. Besides, (Usman et al., 2021) reach the conclusion that Islamic banks might temporarily rely on spreading awareness of Shairah compliance Fintech solutions to broaden their target market due to the fierce competition that exists between them and conventional banks. This is particularly relevant given that Islamic banks have not yet caught up in terms of offering the same Fintech infrastructure as their rivals. Therefore, the results of this study suggest that more financial institutions will develop Shariah-compliant Fintech services to incorporate significant Shariah-biased people who are not covered by traditional counterparts.

Bangladesh is expected to graduate from the least developed country status in 2026; as a result, it is crucial for an emerging nation like Bangladesh to ensure the financial and economic progress of individuals who are less fortunate and do not have access to traditional banking services. In light of this, more financial institutions should step forward to collaborate with mobile financial service providers to introduce digital saving schemes. Through this partnership, all registered users, especially students and underprivileged groups, will be encouraged to develop good saving habits (Ouma et al., 2017). Furthermore, (Ozili, 2018) corroborates that the inclusion of low-income people will also assist financial institutions in surviving macroeconomic shocks and preserving the regional economy.

This study gathered responses from 342 respondents to explore the adoption of Fintech by well-known Shariah-based financial institutions in Bangladesh. In reality, the adoption of Fintech by respondents from other countries that are more focused on conventional financial institutions may result in inconsistent findings from this study. As a result, the study contends that greater sample size and the inclusion of many emerging nations will enable the study's results to be generalized. Furthermore, future research can include additional factors to strengthen behavioral intention predictors, such as perceived trust, perceived risk, perceived cost efficiency, and policy support.

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Declaration of conflicting interests

The Author(s) declare(s) that there is no conflict of interest.

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Manuscript received: 08.06.2022

Manuscript received in revised form: 07.10.2022

Manuscript accepted: 10.10.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 46-57
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Public–Private Partnerships and Their Limitations in Sustainable Public Sewerage Industry: A Comparative Analysis of Three Municipal Cases in Japan

Naoki Fujiwara [1] +

[1] Otemon Gakuin University, Osaka, Japan

Abstract: *Since the mid-1980s, many public water and sewerage business reforms have been carried out in countries around the world in the form of privatization and the introduction of market systems. In Japan, municipalities operate sewerage businesses as a public service, and their revenues are expected to decline in the future due to a decrease in population and the deterioration of existing facilities and equipment. Therefore, in this study, we investigated the administrative reform of the public sewerage businesses in Japan as a means of increasing business efficiency and achieving sustainable management. For our research method, we conducted a case study of three advanced municipal sewerage business reforms, which were aimed at introducing outsourcing through long-term concessions, but two were abandoned by the local councils in the middle of the process. The research shows that the limiting factors for these sewerage business reforms include the uncertainty regarding the required investment for heavy rain and earthquake countermeasures. With growing awareness of disaster prevention and mitigation, municipalities are expected to mobilize maximum resources in an emergency. Furthermore, facilities that were constructed in the 1960s to meet the needs of a growing urban population have deteriorated and become an "unmeasurable risk." The second point is the uncertainty about the amount and duration of the central government subsidies provided to municipalities. Due to growing interest in environmental changes caused by global warming, severe weather events attract greater public attention. New capital investment is required to strengthen the capacity of sewerage systems, especially in densely populated urban areas. Under the principle that rainwater treatment is a public expense, about half of the construction cost of sewerage facilities for rainwater is subsidized by the central government. This is a customary yet unstable fiscal policy, making it an uncertain factor in implementing long-term public–private partnership projects.*

Keywords: administrative reform, concession, publicly owned enterprises, public–private partnerships, public sewerage business

JEL Codes: D73, L33, R53

1. Introduction

Water is an indispensable resource for humans, and water services need to be developed by prioritizing the public interest from a long-term perspective (Koppenjan & Enserink, 2009). Historical experience shows that there are at least three models of water provision in practice: public, private, and community models. The

+ **Corresponding author**. Naoki Fujiwara, Address: 2-1-15 Nishiai, Ibaraki, Osaka, 567-8502, Japan
E-mail address: n-fujiwara@otemon.ac.jp

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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e-mail: editors@reaser.eu

public model dominates water services, but privatization and public–private partnerships (PPPs) have been introduced to increase efficiency.

Since the mid-1980s, liberalization has led to numerous water industry reforms, allowing for more privatized and commercialized services, thereby initiating the economic globalization process (Bakker, 2003, 2007; Swyngedouw et al., 2002). Municipalities are compelled to make trade-offs between environmental and social sustainability and economic sustainability. Thus, utilities may circumvent contradictions by finding creative solutions to operate within regulations, service delivery models, and municipalities (Furlong, 2012; Furlong & Bakker, 2010).

Monopolistic tendencies are the principal concern in privatization, as these may limit water access for low-income citizens and result in a lack of investment for improving water quality (Cesar, 2019). Some countries, such as the United Kingdom and France, find market competition beneficial compared to public monopoly. In other countries, such as Germany, municipalities create hybrid public/private firms that benefit from both market engagement and economies of scale available under monopoly production. Differences in national traditions of public intervention, institutional arrangements, and public service markets contribute to a great diversity in local public services. (Warner & Germà, 2008).

In Japan, the public water business has been managed as a "local public enterprise." It is a part of the local government, but has introduced corporate accounting to ensure management efficiency and obtained funds through corporate bond issuance. Despite these reforms, a decrease in population and deterioration of existing facilities and equipment has increased the momentum for further public water administrative reform. The classification for the resource management reforms in the water sector was discussed by Bakker (2007), and Japan's public water business reform continues to exhibit the organizational reform of corporatization under asset management via private sector partnership for more efficient management (Author, 2020). However, there is little research on private sector participation in the public sewerage business or analysis of a management and governance model for a sustainable sewerage industry. This study aims to fill these gaps in the research by analyzing reforms of the public sewerage businesses of three Japanese cities based on textual analysis and interview surveys.

2. Research Elaboration

The research methods included scrutinizing preliminary research and conducting comparative case studies of three municipal sewerage business reforms in the Japanese cities of Hamamatsu, Osaka, and Nara. These cities are the most advanced municipalities in Japan's public sewerage business in terms of reforming their businesses through PPPs. This study consisted of two parts. First, we performed a textual analysis of relevant materials published by the national and municipal governments and the proceedings of local councils. Second, we conducted semi-structured interview surveys with municipal officers and, in the case of Osaka, with an affiliated company established to operate the sewerage business. These interviews were conducted in four phases from 2018 to 2021, with a total of 10 executives and other staff members.

3. Results

3.1. Case study 1: Hamamatsu City Government

The city of Hamamatsu has an area of 1,558.04 km^2 and a population of approximately 800,000. It is located between Tokyo and Osaka, both of which are Japan's most densely populated areas. It is a transportation hub that connects the east and west of Honshu island with high-speed trains and highways. It is also an industrial city with three major industries: textiles, musical instruments, and motorcycles. Hamamatsu City Government (HCG) was the first city in Japan to begin operating sewerage facilities by the concession

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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method from April 2018. A merger of cities and towns in 2005 that led to immense expansion of the sewerage treatment area initiated the business reform. The newly transferred Seien area was the city's largest treatment area, accounting for approximately 50–70% of the entire city by both area and sewage treatment amount. Previously, approximately 70 people had operated these facilities, of which 50 were outsourced to the private sector for maintenance, and the remaining 20 were prefectural government staff and public corporation employees in charge of the construction design, operation management supervision, and budget and contractual work.[i]

The HCG decided to introduce the concession method for managing the terminal treatment plant and the pumping station, based on the cost reduction effect and the advantages of restricting an increase in staff. Except for the renovation of facilities (90% of the cost is borne by the city), the management of the target facilities is entirely entrusted to the owner of the operating right (Figure 1).

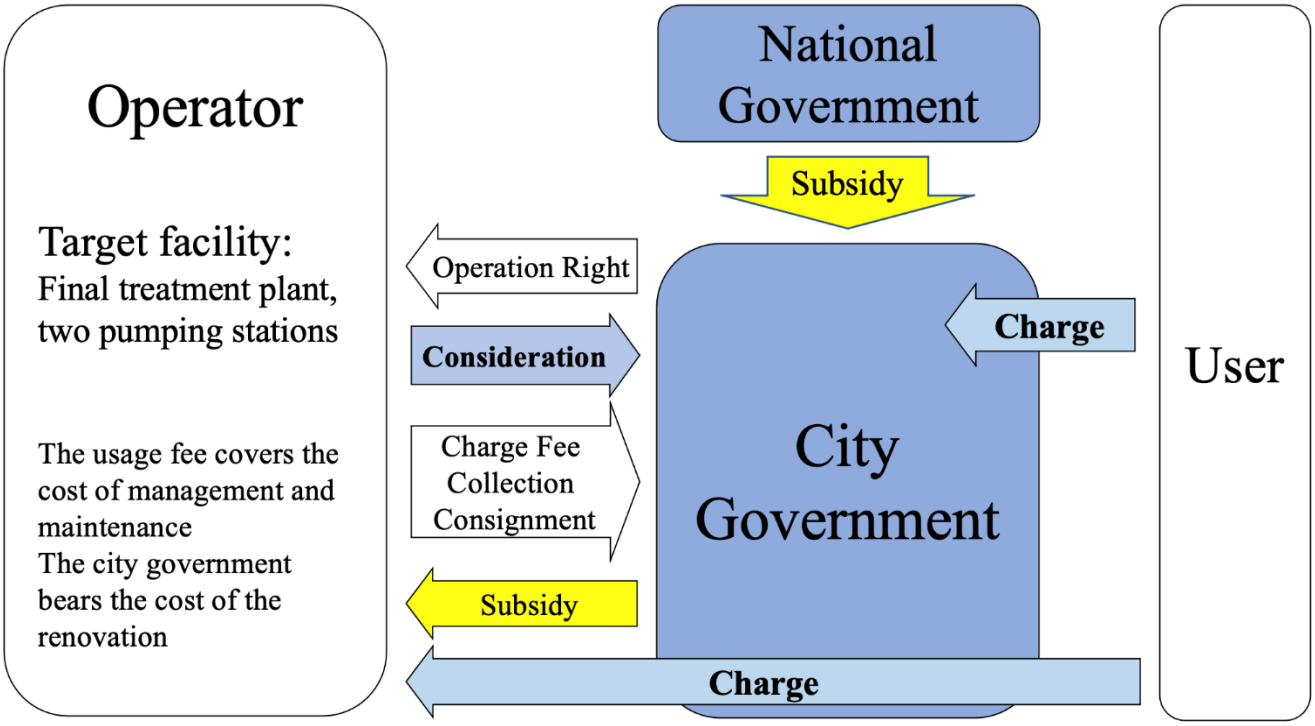

Fig. 1: Scheme of sewerage business concession for Hamamatsu city.

(Source: Adapted by the author from Hamamatsu City Government (2017, p. 10))

After announcing the concession, the HCG started an open call for proposals in May 2016, and selected a consortium of five companies—Veolia, JFE Engineering, ORIX, Tokyu Construction, and Suyama Construction Group—in March 2017. In October 2017, the HCG signed a 20-year concession contract with the joint venture established by the consortium, Hamamatsu Water Symphony Co., Ltd. The concession was estimated to reduce the project cost by 14.4% (8.66 billion yen) by converting the total planned project cost of the direct management and concession method over the project period into present value. In addition, the HCG expected to earn 2.5 billion yen from the company in compensation for the operating right. There are five expected advantages of introducing this concession: reduction of electricity costs by long-term procurement and introduction of new technology; reduction of utility costs, such as chemical costs by global procurement;

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reduction of repair and inspection costs by in-house production and specification changes; education and training by skilled technical staff; and an increase in regular employees.[ii]

3.2. Case study 2: Osaka City Government

Osaka is the central city of western Japan's Kansai region, which is the second most populous area after Tokyo. Approximately 2.75 million people live in its area of 225 km^2. The purpose of the organizational reform of Osaka's sewerage business consists of the following six points: First, it aims to maintain high-level citizen services, securing high-quality technology, accumulating new know-how, and acquiring the skills and know-how of the staff engaged in the sewerage business. Second, it seeks to implement project and business development through joint ventures with the private sector, which is difficult for public bodies. Third, it aims to implement water drainage and improve the combined sewer system at considerable time and cost to secure citizens' safety. Fourth, it seeks to improve the efficiency of the business under an increasingly severe operating environment owing to the huge amount of renewal of treatment and sewage facilities required, despite the decreasing trend of water consumption and revenue. Fifth, it aims to review the number of maintenance department staff, as they constitute a larger proportion than in other cities. Sixth, it is a response to the demand for sewer engineers and technicians.

The Osaka City Government (OCG) aims to introduce a "mixed operation rights system" as the final organizational form of the sewerage business. This system is a vertical separation system in which local governments own facilities and private companies carry out business operations and provide capital investment, such as financing the renewal of facilities. For facilities throughout the city area, external organizations manage the sewerage business, except for new construction, such as large-scale remodeling and reinvention, which requires policy approval. The contract period is assumed to be 20–30 years. As Figure 2 shows, the owner of the operation rights implements its business with the service purchase compensation (public expense) paid from the public sector and charges from service users (private expense).

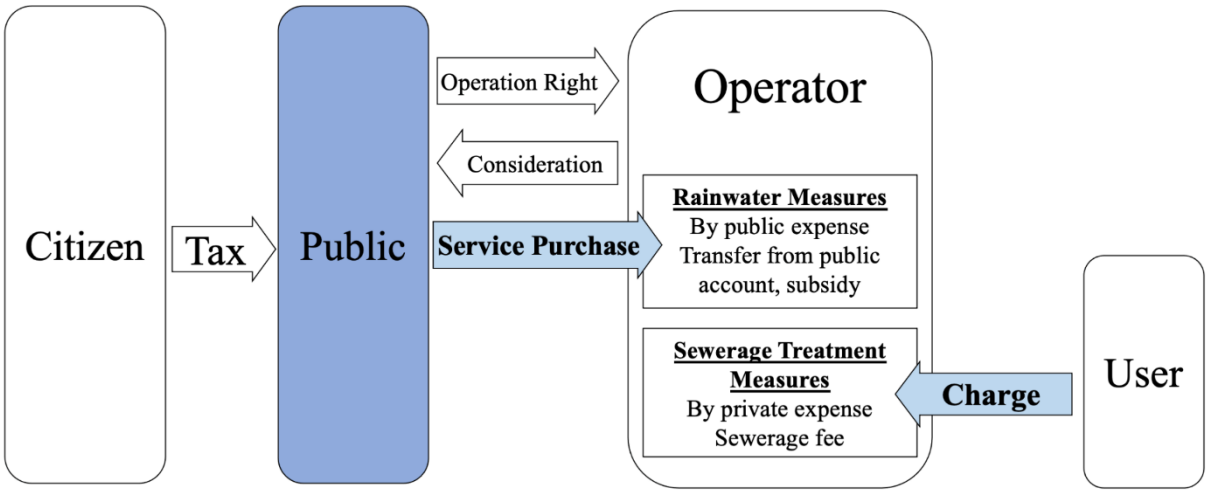

Fig. 2: Model of a mixed operation rights system for Osaka city.

(Source: Adapted by the author from Osaka City Government (2015, p. 57))

For the expected schedule of this organizational transformation, three steps are assumed for the transition of organizational reform (Table 1). Phase 1 involves comprehensive outsourcing, carried out on the operation and maintenance of sewerage facilities by the Urban Technology Center, an affiliated association of the OCG. In phase 2—the current stage— small, simple renewals will be implemented by the newly established city-

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owned enterprise in addition to the comprehensive outsourcing of operations and maintenance. Finally, in phase 3, a mixed operation rights system will be introduced, and a range of facility renewals and refurbishments necessary for operation will be implemented.

Table 1: Steps for management reform of Osaka's public sewerage business

Business Area	Phase 1	Phase 2	Phase 3
Business Area A **Public Administrative Specific Works**	**Public:** Organized work related to comprehensive business development Operations involving the exercise of public authority based on the sewerage law		
Business Area B **Construction**	**Public**: New construction for anti-flood, combined sewerage improvement Large-scale update and renovation works		
Business Area C **Operation and Maintenance**	**Private:** Comprehensive outsourcing	**Private:** Comprehensive outsourcing Small simple renewal works	**Private:** **Mixed operation right system** Contract term 20–30 years
Expected Effects of Business operations	Reduction of maintenance costs	Revenue growth from domestic and overseas business development	Reduced construction costs
Contracted Party	Affiliated general incorporated association	• New entity (stock company) • 100% owned by city government	• Stock company • A part of the share is owned by private company

(Source: Osaka City Government (2015, p. 67), modified by the author)

In the Osaka city sewerage business budget in March 2016, the Osaka City Council stated that the city was responsible for managing the sewerage business, supervising it to protect citizens' safety, and ensuring more efficiency and sustainability for the future. Moreover, the council announced five resolutions on budget execution concerning the sewerage business organizational reform (Table 2). Thereafter, the Clearwater OSAKA Corporation was established on July 1, 2016, and operations started on April 1, 2017.

Table 2: Conditions of Osaka City Council for the sewerage business organizational reform budget

Maintain current service level	For outsourcing the sewerage business operation to a newly established company, the city must sufficiently supervise the company not only to make the management more efficient but also to acquire the knowledge and technology of the present staff.

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Secure a crisis management response system	The city must ensure that the safety and security of the citizens are maintained, fully considering crisis management, including disasters.
Reduce costs by private management method	With the establishment of a stock company, it is necessary to consider the introduction of a more effective performance procurement system and take measures to reduce the burden on citizens.
Accountability and information disclosure	It is necessary to report the business plan to the City Council immediately after the establishment of the corporation.
Thorough consideration of and accountability in promoting reform	The operating power system must be carefully examined, providing polite and sufficient explanations to Parliament.

(Source: Sourced by the author from Osaka City Council. Gian Dai 130 Go Heisei 28 Nen Osakashi Gesuido Gigyo Kaikei Yosan nitaisuru Futai Ketsugi [Incidental resolution for Bill 130, 2016 Osaka City Sewerage Business account budget]. Retrieved from https://www.city.osaka.lg.jp/shikai/page/0000349891.html (Accessed May 17, 2021))

3.3. Case study 3: Nara City Government

Nara city, located 30 km east of Osaka city, has a population of approximately 360,000 across an area of 276.94 km^2. It is a historical region as Nara was the capital of ancient Japan 1,300 years ago. The Nara City Government (NCG) identified four problems with the city's water and sewerage business. First, there is an increased need for renewal due to aging facilities; second, revenue has decreased owing to the declining population, especially in the eastern region; and third, there is a shortage of professional technical staff and difficulty in recruiting new and mid-career staff (Tsujii, 2017).

The NCG considered introducing a concession system that is not a pure business consignment but instead chose to promote facility renovation and flexibly encourage the vitality of the private sector, yet guaranteeing publicity and accessibility rather than completely leaving it to the private sector. In this scheme, a PPP company is established as a concession-type trustee; the city invests 51% and seeks remaining investment from private companies. The NCG controls the management of the new company and secures technology succession both by dispatching staff from the NCG Public Enterprise Division and utilizing the technology of the private partners.[iii]

The concession scheme for the NCG is shown in Figure 3. The contract period is expected to be 15 years, and only the operating right will be held by the private sector, while the facility will be owned by the NCG. Approximately half of the PPP companies' staff are expected to be dispatched from the NCG. New investments in business operations will be implemented by the company.

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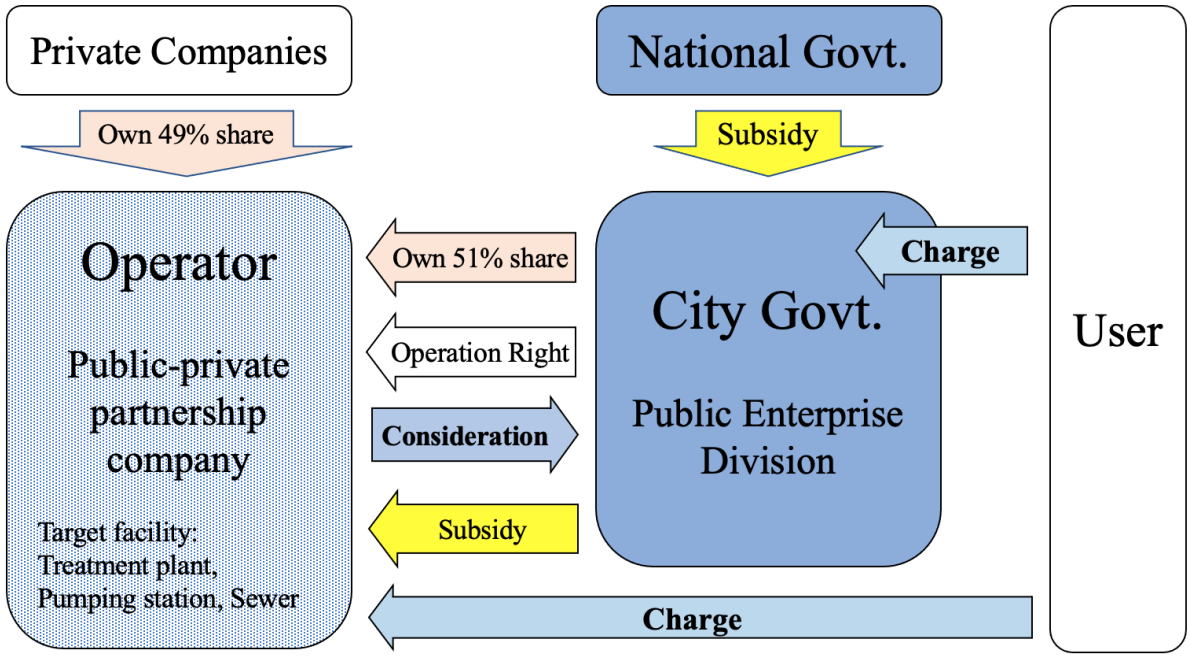

Fig. 3: Scheme of Sewerage Business Concession for Nara city.

(Source: Adapted by the author from Nara City Government (2017, p. 13).)

In this way, the NCG has been preparing to introduce a concession, although the draft ordinance for introducing it was rejected by the city council in March 2016. The city council criticized the draft as follows.

Water and sewerage are important infrastructure facilities in daily life and should be treated equally in a city-wide plan. There are still many issues to be solved, such as the fact that only a part of Nara city is the target area, and that the proposal is too sudden, and that understanding has not yet spread (Liberal Democratic Party).

The area plays the role of the city's water source pond. Local residents have made efforts to protect water sources, and complained that privatization is turning their backs on this effort and letting the city abandon the area (Communist Party).

This privatization is a sudden proposal, and there is a lack of explanation for the relevant areas, so it cannot be said that the residents have fully understood it. A polite explanation of the relevant areas and the overall picture of the plan should be given, and the ordinance should be proposed only after the understanding and cooperation of the residents (Nara Mirai no Kai [Nara Future Association]).

After the rejection of the draft concession ordinance, the NCG introduced a comprehensive business consignment for the water and sewerage business for 2.5 years from October 1, 2018. It is examining whether to grant a concession to the joint company that has been entrusted with the consignment, Nara City Sewerage Service, which consists of six private companies. The contents of the comprehensive consignment work are general management of water and sewerage; terminal treatment plant operation management; planned maintenance work, such as patrol/inspection, resident/accident response, sewer inspection/cleaning, emergency/disaster response, sewerage treatment plant and pumping station renovation design and construction; and minor maintenance work. The envisaged cost is approximately 555 million yen.[iv]

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4. Discussion

This section compares the cases of sewerage business reforms in the three local governments based on the interview survey, and examines the conditions under which PPPs for sewerage business reforms can create a sustainable sewerage industry. As shown in Table 3, the balance sheets of all three municipalities discussed in this study are expected to deteriorate in the future owing to their declining populations and aging facilities, and the momentum for improving management efficiency has increased. The reforms in Hamamatsu and Nara cities were triggered by the 2005 merger of cities, towns, and villages, but in the case of Osaka city, there is a more positive reason, namely, awareness of the business opportunities for wide-area expansion of public sewerage projects. Osaka and Nara city governments have tried to introduce a concession, but have not yet obtained the consent of the local government council.

Table 3: Comparison of three local governments' sewerage business reform

Municipality	**Hamamatsu city**	**Osaka city (phase 2)**	**Nara city (after the concession ordinance was rejected)**
Motivation for reform	Area expansion due to merger of cities, towns, and villages Need for new personnel and efficiency	Wide-area business opportunity	Deterioration of future income and expenditure Lack of staff
Entrusted business content	Narrow (treatment plant/pumping station operation management)	Wide (treatment plant/pumping station operation management)	Wide (treatment plant/pumping station operation management, sewerage maintenance)
Target area	Partial areas (50–60%)	All city areas	Partial areas (3%)
Contract period	20 years	5 years	2.5 years
Entrusted organization	5 private companies form a joint venture	Municipally owned enterprise	Municipal and private joint company (city owns 51%)
Effect amount (within contract period)	8.6 billion yen	5.5 billion yen	n.d.
Degree of aging facilities	Medium	High	High
Stormwater and sewage classification	Clarified	Unclear (combined sewerage)	Clarified
Predictability of renovation and renewal costs	High (relatively clear amount of renovation and renewal required in the future)	Low (aging facilities/heavy rain countermeasure costs)	Medium (aging facilities)
Future prospect	Concession verification	Concession introduction	Concession introduction

(Source: author)

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The comparative analysis lists four factors as reasons for Hamamatsu being the only city to introduce a concession. Firstly, the scope of work targeted for the Hamamatsu concession was limited to the treatment plant and pumping station. Secondly, there are few aging facilities in areas where concessions were introduced, and it was easy to calculate the long-term estimate of the cost of future renovations and renewals subsidized by taxes. Third, the Hamamatsu city management did not implement reform of the water supply business, as users have a stricter perspective on privatizing drinking water. Reform of only sewerage management is more likely to be acceptable to users than its reform with water supply. Fourth, the Hamamatsu concession was introduced in the newly merged area, which had been operated by a wide-area public administrative body until then, and thus, did not share a sense of community with the rest of Hamamatsu city.

Based on these considerations, the limiting factors of Japan's reform of its public sewerage business management can be summarized by the following five points, as shown in Table 4.

Table 4. Limiting factors in the reform of public sewerage business management

Ensuring redundancy	Uncertainty in heavy rain and earthquake countermeasures • Larger risk of facility operation and maintenance compared to Europe and the United States Sewerage business environment
Aging machinery and equipment	Uncertainty in repair amounts and related expenses • Operation based on the experience of skilled staff • Facilities that are aging and have exceeded their duration
Compensation from taxes	Uncertainty in the amount and period of subsidies from the national government • Rain water treatment by public water, especially in urban combined sewers • National subsidy for facility development for heavy rain countermeasures
Integration with water business reform	The impact of greater resistance to water business reform • Refusal to privatize drinking water
Equal service and accessibility	A sense of inequality between areas where public–private partnerships have been introduced and areas where they have not

(Source: author)

The first factor limiting reform of the sewerage business is the uncertainty regarding the investment required for heavy rain and earthquake countermeasures. Compared with Western countries, Japan's climate is characterized by the requirement to respond to earthquakes and heavy rains that exceed mechanical equipment capacity in peacetime. When considering reforms of Japan's public sewerage business, water and sewerage facilities need to be resilient, and redundancy is required to withstand natural disasters. Moreover, owing to growing interest in environmental changes caused by global warming, severe weather events, such as typhoons and heavy rains, have attracted greater public attention. New capital investment is required to strengthen the capacity of sewerage systems, especially in densely populated urban areas.

In addition, in the event of an emergency, the local government, which is the facility owner, can mobilize the maximum amount of resources (Hart, 2003). With growing awareness of disaster prevention and mitigation among the public, municipalities are expected to mobilize maximum resources in an emergency. As a result, the potential loss of know-how owing to significant outsourcing is also criticized.

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A second limiting factor is the aging of machinery and equipment, which varies depending on the device. Many municipalities operate machinery and equipment beyond the endurance year based on the know-how of veteran staff. Even operating municipalities cannot estimate this risk. At the introduction of a concession, the contracted company is more sensitive to this risk to the local government and has high motivation to undertake regular planned maintenance with updates after a certain period, instead of fixing simply when a problem occurs. This raises the costs of construction investment spending.

Third, in Japan, under the principle that rainwater treatment is a public expense, local government taxes are used as a source of funds, and approximately half of the construction cost of sewerage facilities for rainwater is subsidized by the central government. This is a customary, yet unstable, fiscal policy. It acts as a hindrance to long-term PPP contracts of more than 10 years. Fourth, there is deep opposition, including emotional opposition, to integration of water supply business reform with sewerage business reform, including the introduction of PPPs as privatization of the water supply business. Fifth, from the perspective of providing equal services and accessibility, citizens may oppose the introduction of PPPs in only a part of city areas.

5. Conclusions

In this study, we focused on the conditions for introducing a PPP approach, especially in the form of a concession to manage the sewerage business. We identified three uncertainties as limiting factors for PPPs. The first is uncertainty over the service level for ensuring sustainability and the aging of machinery and equipment; the second is uncertainty over the principle of rainwater public expenditure and the national government's subsidy system; and the third is uncertainty of residents about the relevance of the water business and the provision of equal services.

In Asia, the prevalence of managing publicly owned enterprises with capital participation from private companies is increasing (Jensen, 2017). Furthermore, aggressive corporate development of publicly owned enterprises and their expansion outside their regions are increasing with the advancement of urban entrepreneurialism (Tremml, 2019). In Japan, where disaster risk is higher than in Western countries, sewerage projects are required to have higher redundancy and a higher public commitment.

Although significant private consignment and privatization are difficult in Japan, it is realistic to provide services by public or publicly owned enterprises. Furthermore, management efficiency is expected to improve as publicly owned enterprises compete to expand their jurisdictions. The national government is required to support the establishment of such publicly owned enterprises and develop a transparent and stable subsidy system over the long term. For future research, we would like to undertake a comparative analysis of the governance of sewerage business management by publicly owned enterprises in Japan with overseas cases.

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Manuscript received: 16.02.2022

Manuscript accepted: 31.08.2022

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ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 58-69
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Education as a factor influencing the economic growth of the V4 countries

Eva Gruševá[1] and Veronika Blašková [1+]

[1] Mendel University in Brno, Department of Statistics and Operation Analysis, Zemědělská 1, 61300 Brno, Student at the Faculty of Business and Economics

[1+] Mendel University in Brno, Department of Statistics and Operation Analysis, Zemědělská 1, 61300 Brno, Associate Professor at the Faculty of Business and Economics

Abstract: *The phenomenon of the Fourth Industrial Revolution fundamentally affects the essence of the functioning of industry, trade and many other parts of the economy of developed countries. New and developing disciplines will need workers with a high-quality education matching the needs and demands of technological development. In order to evaluate education as a determinant of economic growth, multivariate regression models were created for each of the V4 countries separately. In this work, it was examined whether the variables related to primary, secondary and especially tertiary education affect economic growth. Data for V4 countries come from 2000-2020. From the estimated models, it can be concluded that in all the countries selected there is a positive impact of tertiary education on the economic situation of the country.*

Keywords: education, Industry 4.0, GDP per capita, economic growth, Visegrad Group

JEL Codes: H52, I25

1. Introduction

The technological changes currently coming to market are changing society and our way of life, creating the concept of the Fourth Industrial Revolution. Every industrial revolution is reflected in a significant factor in people's lives. The Fourth Industrial Revolution, or Industry 4.0, which is the stage we are at today, is bringing with it revolutionary changes in production, but also in the fields of economics, the labour market and education. Industry 4.0 has the greatest impact on the position in the labour market, the training of potential and existing employees, but also on production.

The Europe 2020 strategy set the boundaries in the various areas to be achieved by the Member States at the end of 2020. One of them is the goal of research and development. Specifically, there is a target set for each EU country to spend at least 3% of its GDP on R&D in 2020. Mudronja et al. (2019) assume that R&D is considered by many theories to be a driving force for long-term economic growth and, therefore, it requires investments. Thanks to the implementation of new production processes, work organization will bring continuity and interconnectedness to professions and work processes.

As a result of the changes brought about by the industrial revolution, the education of the population plays an important role. It is much better to apply more complex technological procedures to a population with a large proportion of those with tertiary education than to populations where a large part has only primary education.

[1+] **Corresponding Author**: *Email*: veronika.blaskova@mendelu.cz, ORCID: 0000-0002-5944-1164

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 58-69
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

In his work, White (2014) focused on the importance of education in the field of STEM (science, technology, engineering and mathematics). In his work, the author emphasizes the fact that in the case of quality education in the field of STEM, students are interested in science, technology, engineering and mathematics. Subsequently, these students choose a career in this area. These people then become scientists who participate in research activities and thus become the bearers of economic growth.

In 2015, Dragoescu (2015) also dealt with education as a determinant of economic growth. Using Romanian data, she examined and analysed longitudinal data from 1980 to 2013. In them, she found that there is a connection between higher education and economic growth. Stankic et al. (2018) have a similar view on education in their article. According to their research, ICT and education are important determinants of economic and overall social development.

Undoubtedly, every state wants to increase its economic level. In the context of Industry 4.0. technological development, increasing demands are placed on the technical knowledge and skills of employees. Therefore, education can be considered one of the main factors that could bring about an improvement in the economic level of countries. Tertiary education in the V4 countries is largely financed from the state budget. If raising the level of education did not bring increased labour productivity and thus economic growth, the financing of education from the state budget would be an item that could potentially be better used in other sectors.

The aim of this article is to evaluate whether the level of tertiary education affects economic growth in the V4 countries. This relationship will be investigated using multidimensional regression. The specific researched factors that could affect the size of the GDP of the V4 countries will be selected based on research in the theoretical basis. Thanks to the technical revolution of Industry 4.0., it must exceed the knowledge requirements of job seekers, it will give priority to examining the impact of education on the aforementioned economic levels of countries.

Two hypotheses were established for the econometric analysis.

- The level of tertiary education significantly affects the size of GDP in individual countries.
- The V4 countries have a similar structure of educational factors influencing the size of the countries' GDP.

2. Theoretical background

Liao et al. (2018) in their work dealt with the Fourth Industrial Revolution, which is usually referred to as Industry 4.0. They assumed that research and new technologies were closely linked to the ongoing industrial revolution and that this revolution would have a positive effect on economic development. It has been shown that science, education, human capital and training are the biggest contributors to creating good conditions for the Fourth Industrial Revolution, which has a further impact on GDP growth, the determinant of economic growth.

Gleason et al. (2018) addressed the issue of the need to increase the skills of workers as a condition for the introduction of Industry 4.0 in practice. They mention the need to work to create a digitally literate and technologically competitive society, especially with the help of professionals who will be highly-educated. According to Gleason et al. (2018), this also influences whether universities have partnerships in a world where students can complete exchange programs and gain greater insight. In their work, the authors mainly examined the issue of Singapore's economic growth associated with Industry 4.0. The authors note that Singapore is currently investing a lot of resources in tertiary education. It has even become one of the main government tools for economic development. According to the authors, the lifelong education of existing workers is also an important element for the successful implementation of the innovations associated with the Fourth Industrial Revolution.

Jung (2020) has dealt with the Fourth Industrial Revolution and the associated knowledge economy in the conditions of South Korea. This was based on the idea that knowledge is the main driver

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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URL: http://www.reaser.eu
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of economic growth in all world economies and, at the same time, it is becoming a new comparative advantage. It was found that the strengths that create a suitable environment for the knowledge economy are a skilled workforce with a university degree, and higher R&D spending. Specific private companies and their focus, located in the given region, also have a great influence on the development of Industry 4.0.

Langdon (2011), the U.S. Department of Commerce, Economics and Statistics Administration published an article on the fields that will be needed for the labour market in the future. The STEM disciplines, which are science, technology, engineering and mathematics, were identified as key elements. According to the article, it is precisely these fields that have the greatest impact on competitiveness and innovation and the development of any economy. It is these factors that are subsequently an important determinant of economic growth. The article analysed the US labour market, which was divided into STEM and non-STEM workers. STEM workers are more likely to have a university degree and their incomes are on average 26% higher. The market analysis came to the conclusion that it is expected that STEM workers will be increasingly in demand in the future. This will be associated with a high increase in job positions in these fields. And therefore there will be an increased interest in education in this area.

In their study, Kennedy and Odell (2014) also addressed the importance of STEM workers in the labour market in increasing the competitiveness of economies. In their work, they examined in particular the process of teaching the given disciplines and the connection between higher education and the workforce. The conclusion of their work was that economic development not only requires workers educated in one of the STEM fields. According to the authors, it is necessary for students to gain a wider perspective and to choose multidisciplinary studies or enrol in subjects in other fields at schools. This can make STEM more interesting for a larger group of people, as even those students who study sciences other than STEM can learn certain information from STEM disciplines and thus contribute to the development of their field. Kennedy and Odell (2014) argue that STEM disciplines encourage students to think critically and use technology to find solutions to their questions.

In her work, Theodoropoulou (2019) also addressed the skills required in the market. She mentioned several sectors that seem interesting in the future, such as IT, research and development, marketing, healthcare and legal services. All these professions have a medium or high qualification as a requirement. Most of the "professions of the future" will require specific skills and therefore an emphasis on knowledge. She found that there is a correlation between the number of tertiary education graduates and added value in research and development. Therefore, following the EU strategy, he argues that the quality rather than the quantity of tertiary education needs to be improved. Furthermore, the work deals with the level of key competencies (reading, mathematics and general knowledge) in basic education. However, it also evaluates the quality of teaching in schools using the length of study and the subject matter. He sees the need to eliminate early school leaving and combatting social inequalities as important factors in raising qualifications.

Mercan and Sezer (2014) dealt with the issue of the influence of education on economic growth. They assumed that education has a significant impact on the development of countries through a positive effect on increasing human capital. This seems to be a good economic tool for combatting unemployment and poverty. In the Turkish environment, they modelled GDP depending on the size of education expenditure. Through a regression analysis of these time series, it was found that education expenditure has a significant positive statistical effect on GDP. In their work, Mercan and Sezer (2014) further note that GDP growth is used as the factor of economic growth according to economic theories. Therefore, it has been shown that increasing spending on education, especially tertiary education, has a major impact on the growth of the national economy.

Similarly, Holland et al. (2013) based their study on the assumption that there is a positive relationship between education levels and GDP growth rates. The authors managed to demonstrate the important role of a university-educated workforce in economic growth and increasing competitiveness. Specifically, based on their research, they found that a 1% increase in the share of the workforce with a university degree increases the level of long-term productivity by up to 0.5%.

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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Danacica and Belascu (2010) examined the connection between higher education and economic growth, specifically in the conditions of Romania. The relationship was examined on the basis of the VAR model, which was constructed in such a way that, as in other works of a similar type, GDP became the determinant of economic growth. One of the explanatory factors for GDP modelling was the level of higher education. Based on the model, the authors demonstrated Granger's causality between variables, and thus the fact that GDP is affected by the level of higher education.

In contrast, Freimane and Balina (2016) assessed in their article whether research and development have an impact on economic growth. In the EU, they modelled GDP in individual countries converted into employees. Domestic and foreign investment, expenditure on research and development, and the recalculated number of tertiary educated people in the labour market were used as explanatory variables. Both point out that the bearers of human capital that have had an impact on research and development are primarily people with a completed tertiary education. They used all these variables, both exploratory and explanatory, in logarithmic form, as the percentage changes seemed to express reality better than the unit changes. In their work, Freime and Balina used the objectives of the Europe 2020 strategy, which set out the share of R&D spending that individual Member States want to achieve by 2020. The countries with the highest share of R&D to GDP are the Scandinavian countries (Sweden and Finland) and then the countries of western Europe, namely Denmark, Germany and Austria. By contrast, countries such as Cyprus, Romania and Bulgaria were the worst off in 2013. Unfortunately, according to the authors, the results of the research by Freiman and Balina (2013) were negatively affected by significant heterogeneity between Member States. Nevertheless, R&D expenditure was found to have a positive statistical effect on the size of real GDP. Following the division of Member States into more homogeneous groups, it was found that countries with R&D expenditure of less than 1% are the R&D parts of the economy that should be taken into account in order to allow the national economy to grow.

Fernald and Jones (2014) also looked at the future of economic growth in the context of education and research and development. According to the results of their work, the trend that has been observed so far will slow down. In particular, the concentration of research and development in the field of artificial intelligence, which could replace some workers in the future, is a new start for the rapid growth of technology. In addition, Fernald and Jones note that China and India will become strong new players in research and development.

In contrast, Mudronja et al. (2019) examined the relationship between economic growth and investment in research. In their work, they focused mainly on the growth of the regions. They explained regional growth (expressed as GDP per capita) through R&D investment and also examined variables such as unemployment and population change. The results of their work have shown that regions that invest more resources in research and development also show higher economic growth and at the same time do not tend to reach a saturation point where economic growth stops completely. At the end of their work Mudronja et al. (2019) also note that innovation is a key source of competitive advantage. Therefore, R&D regions need to focus on the latest technologies and trends.

In their work, Sokolov-Mladenovic et al. (2016), similar to other authors, found that the source of competitive advantage within individual economies is mainly knowledge and technology. They rely on the fact that in the new theory of growth, the study of knowledge is a key determinant for economic growth. The authors conducted their research on the basis of a regression panel analysis for the EU28 countries. They chose the growth rate of real GDP as a dependent variable; the independent variable was primarily the share of R&D expenditure to GDP. In addition, control explanatory variables that should have an impact on real GDP growth, such as gross fixed capital formation, the share of government final consumption expenditure and fertility rates, were included in the model. Based on this linear model, they managed to prove that with a 1% increase in R&D expenditure, real GDP will increase by 2.27%.

The impact of research and development on economic growth and productivity was investigated by Blanco et al. (2015). Their work is based on the values observed in individual US states for the years 1963-2007. Using an econometric model, they examined the relationship between investment in

ISSN: 2247-6172
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research and development and productivity in a country's economy. They managed to statistically demonstrate that research and development has a long-term positive impact on economic growth. Specifically, the model shows that increasing R&D spending by USD 1 increases GDP by almost USD 5.

Bayarcelik and Tasel (2012), who dealt with the situation in Turkey, viewed the impact of research on economic development. These authors believed that economic growth is mainly due to the presence of companies in the market that specialize in the newest production methods and processes. During the analysis, they found that it is appropriate to deal with specific companies that carry patents for new technologies. Bayarcelik and Tasel (2012) modelled GDP as a function, which is explained by the number of employees in research and development, the number of patents in a given company and R&D expenditure. All variables in the model were logarithmized, as the percentage increments turned out to be more telling under the given conditions. Based on their research, it was found, as in other studies, that there is a positive relationship between the number of R&D employees and GDP growth, as well as between R&D expenditure and GDP growth. At the same time, however, it surprisingly was also shown that there is a significant, but negative, relationship between the number of patents and GDP growth.

Similar research was conducted in the environment of the BRICS countries (Brazil, Russia, India, China and South Africa) by two scientists, Wang and Zhang (2020). They based their work on the assumption that it is science and technology that bring socio-economic development. In their work, the authors did not only consider economic growth independently, but also dealt with the environment, which may be burdened mainly by CO_2 emissions due to increasing technologies. Therefore, they tried to find a relationship that would reflect that not only research and development helps economic growth, but also the creation of new technologies that save the environment. This was confirmed by the authors, as a positive impact between research and development and the reduction of CO_2 emissions has been demonstrated. This fact had the most significant impact in Russia and China. In conclusion, it is Wang and Zhang (2020) who mention that research and development should focus primarily on investment in the development of renewable energy in order to avoid environmental pollution due to economic development.

The relationship between research and development and economic growth has also been investigated by Mudronja et al. (2019); they use the theory of endogenous growth in their work for research on economic growth. They primarily focus on an analysis of the impact of investments in research and development through panel analysis of data in selected EU countries. The logarithm of GDP per capita in a given regional unit was chosen as the explained variable. This variable is explained in the model using the first-order autoregressive variable, the size of investment in research and development, unemployment in the region, population changes in the region, trade openness of the region and transport infrastructure. Based on their research, it was found that there is a positive relationship between investment in research and development and GDP growth in the area. They further emphasize that individual regions should strive to develop the social, cultural and institutional environment so as to set suitable conditions for innovation processes and thus increase their competitiveness.

In his article, Jakopin (2020) dealt with economic growth and the impact of structural changes. He sees the importance of economic growth as having a positive effect on changes in the labor market.

Maradana et al. (2017) took a different view on this issue. They addressed the question of whether innovation contributes to economic growth. In their work, they tested the causality between innovation and economic growth in the environment of European countries. To do this, they created several econometric models. In a sample of 19 European countries, including the Czech Republic, it was proved that there is a mutual Granger causality between innovation and economic growth. As this is a mutual causality, the authors point out that it is necessary to focus not only on supporting innovation in order for economic growth to happen, but also on supporting economic growth in order for innovation to take place. At the end of the article, the authors Maradana et al. (2017) point out that it is also necessary to focus on economic policies that increase economic growth. In particular, by establishing a suitable and

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stable environment for companies, so that even private companies are willing to invest more in research and development and thus bring innovation to the economy. Examples of such measures may be various tax measures or the provision of subsidies and grants.

3. Data and methodology

The data for this work were obtained from the publicly accessible databases of official organizations. Specifically, these are organizations such as Eurostat, the World Bank and the OECD. All selected time series were for the period 2000—2020.

A country's economic growth was measured using real GDP per capita in euros. The following variables were selected as potential factors influencing a country's economic growth. The selection of variables was inspired by the studies in Table 1. Specifically, it was government expenditure per student on tertiary education as % of GDP per capita, expenditure on tertiary education as % of government expenditure on education, gross domestic spending on R&D as % of GDP, indicators of population by education as a percentage of the total population separately for primary, secondary and tertiary education and, last but not least, indicators of the unemployment rates of young people not in education who have achieved a given level of education as a percentage of the total population separately for primary, secondary and tertiary education.

Table 1: Choice of variables for multidimensional regression model

Indicator	**Authors**
GDP per capita	Mundronja et al. (2019), Danacica and Belascu (2010)
Government expenditure per student on tertiary education	Freimane a Balina (2016)
Expenditure on tertiary education	Mercan a Sezer (2014)
Gross domestic spending on R&D	Jung (2020)
Population by education of primary/secondary/tertiary level	Freimane a Balina (2016), Gleason et al. (2018), Holland et al. (2013)
Unemployment rates of young people not in education	Mundronja et al. (2019)

The finding of statistically significant factors was performed using a multidimensional regression analysis of time series, similar to the article in Zámková, Blašková (2013). A t-test was used to test the statistical significance of the parameters.

Multicollinearity between explanatory variables was verified using VIF values. The assumption of the correct model specification was verified using the LM test. The White test was used to test the heteroskedasticity of the residue. The Chi-Square test was used to verify the assumption of a normal residue distribution. The absence of autocorrelation in residues was checked using a residue correlogram. Last but not least, attention was always paid to apparent dependence in time series. Because economic time series are usually non-stationary, the cointegration of time series has always been verified by means of the ADF and KPSS test and the above-mentioned correlogram of residues. The quality of the model was evaluated using the Theil coefficient.

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4. Results

4.1. Model estimates

Based on the ADF test and the KPSS test, it was found that the selected time series are non-stationary. In order to verify the concept of cointegration, it was necessary to proceed to the estimation of the models themselves. To answer the research question, four models were created, one for each of the V4 countries. Based on the graphical analysis of time series, a linear functional form was chosen and individual variables according to VIF values did not show multicollinearity. The final models were created using descending elimination. All models were subjected to tests of classical assumptions. Table 2 shows the p-values for the tests used for the most frequently violated assumptions.

Table 2: P-value of tests of econometric assumptions

	CZ	HU	PL	SK
LM test	0.010	0.402	0.036	0.014
White test	0.217	0.389	0.582	0.196
Breusch-Pagan test	0.927	0.796	0.505	0.081
Chi-Square test	0.755	0.621	0.368	0.313

A slight discrepancy with the specification was identified within the models. From the results of the analysis and graphical representation of the data, it was found that there are remote observations in the models. Violation of the assumption of correct specification was slight, so the models were subjected to further tests. In the tests of heteroscedasticity and normality, the p-values reach values higher than 0.05, so none of these assumptions were violated for all models of the V4 countries. If we look at the graphs of autocorrelation functions (see Figure 1), the problem of autocorrelations cannot be identified from them.

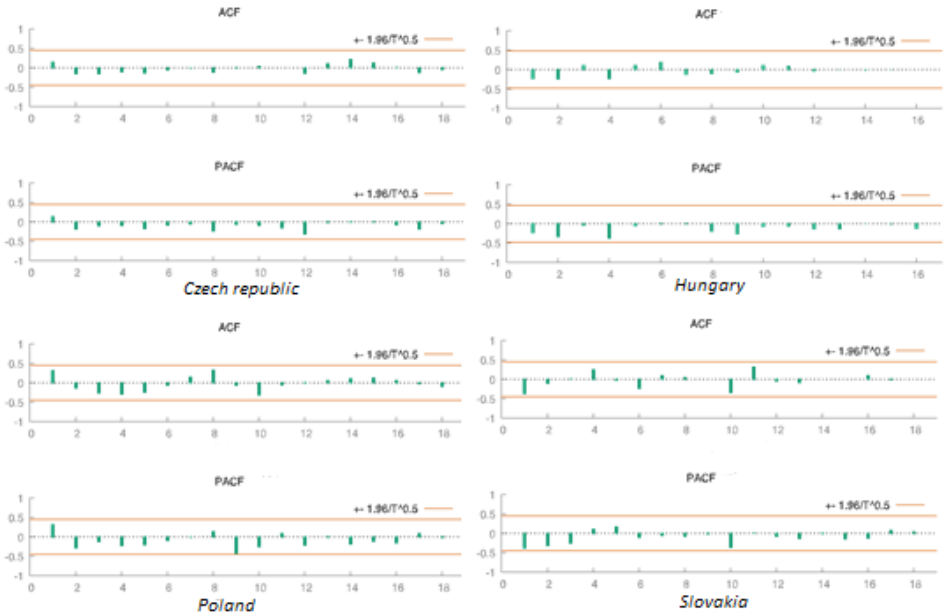

Figure 1: ACF and PACF functions for V4 countries

The time series that were used for modelling were non-stationary. Therefore, it was necessary to verify whether the residues of the resulting models are stationary. This was done on the basis of graphical

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evaluation of the correlograms of residues of individual models and on the basis of p-values of ADF tests and KPSS. The correlograms of the residues and the results of the stationarity tests are shown in Figure 1.

Table 3: P-value for results of stationarity for residues

	p-value			
	CZ	HU	PL	SK
ADF test	0.002	<0.001	0.013	0.003
KPSS test	> .10	> .10	> .10	> .10

Based on the analysis of correlograms, the time series of residues do not show problems with non-stationarity. This conclusion is also supported by the test results from Table 3. The estimated models can be considered high quality, as evidenced by the value of Theil's coefficient of inequality. Its values for individual models of the V4 countries are given in the table below (see Table 4).

Table 4: Theil's coefficient of inequality

	CZ	HU	PL	SK
Theil U	0.380	0.425	0.290	0.388

The values of Theil's coefficient of inequality coefficient did not exceed 0.425, which indicates sufficient quality and suitability of the assembled models. The values given in Table 4 show that the lowest value of Theil's coefficient is in the case of Poland, which indicates the best quality of this model. Furthermore, the Czech Republic and Slovakia show very similar values. The highest value of the coefficient and with it the highest discrepancy can be observed in the case of Hungary.

4.2. Economic interpretation of models and discussion

According to the created models, it can be stated that education significantly affects GDP. The components of education that affect GDP vary from country to country, but despite this, all the models are largely similar. In all four models, for example, they remained important indicators of the number of tertiary educated people. Other explanatory variables vary across the models, due to differences at the V4 level. The resulting models are listed below.

$$GDP_{CZ} = -81573.7 + 1235.21\ SEC_{CZ} + 888.678\ TER_{CZ} - 259.872\ U_SEC_{CZ} - 368.840\ U_TER_{CZ}$$
$$GDP_{HU} = -11667.4 + 369.181\ SEC_{HU} + 207.194\ TER_{HU} - 125.659\ U_SEC_{HU} - 62.889\ EXP_S_{HU}$$
$$GDP_{PL} = 5577.63 + 201.769\ TER_{PL} - 159.951\ U_TER_{PL} + 1529.26\ RD_{PL}$$
$$GDP_{SK} = -23923.7 + 430.376\ SEC_{SK} + 571.035\ TER_{SK} - 177.858\ U_SEC_{SK} + 150.705\ U_TER_{SK}$$

where *GDP is time series a of real GDP per capita;*
SEC is time series of population by education for secondary education;
TER is time series of population by education for tertiary education;
U_SEC is time series of unemployment rates of young people not in education for secondary education;
U_TER is time series of unemployment rates of young people not in education for tertiary education;
EXP_S is time series of government expenditure per student;
RD is time series of gross domestic spending on R&D.

Based on the comparison of models, we can state that the variables included in the models for the Czech Republic and Slovakia are identical. The GDP of both of these countries is influenced by the

ISSN: 2247-6172
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share of secondary and tertiary educated people and at the same time by the percentage of unemployment of the population whose highest level of education attained is secondary or tertiary. This similarity is probably explained historically, since these countries once formed one whole and still have very similar social and economic environments. A very similar model was created for Hungary. This model does not include a variable related to the unemployment of the population with the highest tertiary education attainment. On the contrary, there is an indicator of expenditure on tertiary students. The most different model from the others is the model for Poland, in which there are no variables related to secondary education, but on the contrary, GDP is affected by the size of R&D expenditure.

In all models, it is possible to observe that tertiary education affects GDP in all monitored countries. Tertiary education has the greatest impact on GDP in the Czech Republic, where each increase in the number of tertiary educated by 1% will raise GDP per capita by EUR 888.678 ceteris paribus. In Slovakia, due to a 1% increase in the share of tertiary educated people under otherwise unchanged conditions, GDP per capita increases by EUR 571.035, in Hungary it is an increase of EUR 207.194 and in Poland by EUR 201.769. Dragoescu (2015) came to a similar conclusion in his work, who also demonstrated the relationship between tertiary education and economic growth.

The size of GDP per capita in the Czech Republic, Hungary and Slovakia is influenced not only by the share of tertiary educated people, but also by the share of secondary educated people. The indicator of the share of tertiary educated people in the Czech Republic has the greatest influence on GDP. There, an increase in the number of tertiary educated of 1% increases ceteris paribus GDP per capita by EUR 1235.21. In Hungary, the impact is much smaller, with an increase in the share of tertiary educated people of 1%, GDP per capita grows by EUR 369,181 ceteris paribus. The lowest influence of the share of tertiary educated people on GDP per capita can be observed in Slovakia. Here, ceteris paribus, GDP per capita increases by EUR 430.376 due to a 1% increase in the share of secondary education. However, it should be emphasized that in the Czech Republic and Hungary the impact of the share of secondary education on GDP is higher than the impact of the share of tertiary education. This may be due to the relatively small number of tertiary educated people in these countries. While the share of tertiary educated people according to Eurostat was on average 29.6% in the EU28 in 2019, but in the Czech Republic it was only 21.6% and in Hungary it was 22.5%. However, due to the relatively small number of tertiary educated people, the Czech Republic and Hungary have a larger proportion of the population whose highest level of education is secondary. In 2019, according to Eurostat, 45.6% were secondary educated in the EU28, 66.1% in the Czech Republic and 57.6% in Hungary. According to Loening (2005), the cause of economic growth is education, both primary, secondary and tertiary. In his work, he emphasized that secondary education significantly affects economic growth, especially in countries where the share of tertiary educated people is not so significant, as evidenced by the results described above.

In the Czech Republic, Hungary and Slovakia, GDP is also affected by the percentage of the unemployed whose highest level of education is some form of secondary education. Unlike the previous ones, this indicator has a negative effect on GDP. As Dumitrescu et al. (2009) found, unemployment is very closely related to the size of GDP, so their mutual correlation should be negative. This was also confirmed in the models mentioned above. In all countries where this time series had a significant parameter, we can observe a negative sign. The GDP of the Czech Republic is again most affected by this indicator. In the case of a single percentage increase in unemployment of the secondary educated, there is a decrease of EUR 259.872 in the Czech Republic, ceteris paribus. In Slovakia, in the same situation, it is a decrease of EUR 177.858, in Hungary it is a decrease of EUR 125.659.

The percentage of unemployed in the population who have completed tertiary education proved to be a significant factor in three countries. They are the Czech Republic, Poland and Slovakia. Among these countries, unemployment of the tertiary educated has the greatest negative impact on GDP, again in the Czech Republic. Here, due to the growth of unemployment among tertiary educated people, ceteris paribus, there is a decrease in GDP per capita by EUR 368.840. In Poland, this indicator has a lower, but still negative, effect on GDP. Here, ceteris paribus, with a percentage increase in unemployment in the tertiary educated population, GDP per capita decreases by EUR 159.951. The unexpected value of

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the parameter has appeared in the model of Slovakia. In Slovakia, due to rising unemployment among the tertiary educated, GDP is growing. Specifically, GDP per capita grew by EUR 150.705 due to a 1% increase in the number of unemployed in tertiary education, ceteris paribus. The positive relationship between these variables in Slovakia can be argued in the relatively short observed period by the fact that GDP per capita increased between 2000 and 2020. At the same time, it is possible to observe sharp short-term increases in unemployment of tertiary educated people in Slovakia between 2003 - 2004, 2006 - 2012 and subsequently 2019 - 2020. In the long run, it can be assumed that, as in other V4 countries, the relationship between unemployment and GDP would be negative. At the same time, Slovakia has a systematically higher unemployment rate compared to other V4 countries. In some years, there were up to 50% more unemployed people in Slovakia with a completed tertiary level of education than in other V4 countries.

GDP in Hungary is also statistically significantly affected by the size of expenditure per tertiary student. Expenditure on tertiary students is calculated as a percentage of GDP per capita. In the case of Hungary, the growth of expenditure per tertiary student has, ceteris paribus, a negative effect on GDP per capita. An explanation for the negative relationship between these variables may be, for example, that expenditure as a percentage of GDP in Hungary is systematically one of the lowest in the EU. For example, in 2012, according to World Bank data, only Bulgaria reported lower expenditure on tertiary students. Therefore, it can be stated that spending on tertiary students in Hungary is insufficient to have a positive effect on economic growth. Mercan and Sezer (2014) concluded that education spending boosts economic growth by examining the situation in Turkey, which showed that increasing tertiary education spending has a significant impact on a country's economic growth. However, it should be noted that, according to the World Bank, Turkey had more than twice the expenditure of tertiary students in 2012.

The last indicator that proved to be significant in the resulting models is R&D expenditure. This parameter proved to be statistically significant only in the case of Poland. In Poland, R&D expenditure has a positive relationship with the size of GDP per capita. Ceteris paribus, this is a specific increase in GDP per capita of EUR 1529.6 in the event of an increase in R&D expenditure by 1% of GDP. The great importance of research and development as a determinant of economic growth has also been demonstrated by Jung (2020).

5. Conclusions

In all four V4 countries, tertiary education was found to affect GDP as a determinant of economic growth. The share of tertiary educated people was statistically significantly reflected in the model for the Czech Republic, Hungary, Poland, and Slovakia. In all countries, based on a multidimensional regression of time series, it has been shown that as the proportion of tertiary-educated people in each population grows, so does the national GDP per capita. At the same time, it was demonstrated using the example of the Czech Republic that with the growth of unemployment of the tertiary educated, the size of GDP per capita decreases.

By comparing the created models, it was shown that all V4 countries have a similar structure of factors in the field of education, which affect the size of their GDP. In particular, the size of GDP in the Czech Republic and Slovakia is determined by identical factors. This is probably due to the common history of both countries. Until 1992, these countries formed one common state. Thanks to this, a very similar social, economic, and cultural environment is set up in both countries today.

Furthermore, by using the models, it was proved that the size of GDP per capita in the Czech Republic and Slovakia is influenced by the share of secondary and tertiary educated people and at the same time by the size of unemployment of persons whose highest educational attainment is secondary and tertiary. In both countries, a positive relation was demonstrated between the share of secondary education and GDP and at the same time between the share of tertiary education and GDP.

ISSN: 2247-6172
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The model for Hungary was different from the models of the Czech Republic and Slovakia by only one variable. Within Hungary, unemployment of the tertiary educated does not contribute statistically significantly to GDP per capita. On the contrary, expenditure on tertiary education students was found to affect Hungary's GDP per capita. In Hungary, the variable including the size of expenditure on tertiary education students was reflected in GDP per capita and was unexpectedly negative. This is due to its relatively low expenditure on tertiary education, which, for example, was the second lowest in the European Union in 2012, according to the World Bank. For this reason, the size of expenditure on tertiary education is insufficient and should be increased to have a positive impact.

The model of Poland differed the most from other models, where it was shown that the share of tertiary educated people has a positive effect on the size of GDP per capita, and expenditure on research and development also has a positive effect. There has been a positive correlation between R&D expenditure and GDP per capita in Poland. From this, it can be argued that increasing spending on research and development will also bring about GDP growth.

6. Acknowledgements

This article was supported by the grant No. PEF/TP/2021003 of the Grant Agency IGA PEF MENDELU.

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Manuscript received: 13.12.2021

Manuscript received in revised form: 02.08.2022

Manuscript accepted: 05.08.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 70 - 88
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Transactional Leadership, Well-Being Support, OCB-Altruism, and Employee Performance: Testing Their Relationship

Sri Handayani [1+], Suharnomo Suharnomo [1] and Edy Rahardja [1]

[1] Faculty of Business and Economic, Universitas Diponegoro, Semarang, Indonesia

Abstract: *This study analyzes the relationship between transactional leadership, well-being support, organizational citizenship behavior (OCB)-altruism, and employee performance. Data was collected from 212 respondents who worked in the 11 stone milling companies in Central Java Province - Indonesia. By using AMOS 24 software in processing and analyzing the data, the results of this study found that (1) transactional leadership has a positive and significant effect on employee performance; (2) well-being support has a positive and significant effect on employee performance; and (3) OCB-altruism has a positive and significant effect on employee performance. Employees who have high OCB-altruism have a strong psychological attachment to the organization that encourages them to contribute to the organization both formally and informally by displaying their best performance.*

Keywords: Transactional Leadership, Well-Being Support, OCB-Altruisme, Employee Performance

JEL Codes: D22, L20, L25

1. Introduction

The rapid development of the economy and changes in the business environment have led to higher market competition. Under these circumstances, developing appropriate leadership behaviors to cope with an uncertain environment is not easy. Therefore, a leader who can achieve expectations and competitive advantage is urgently needed to improve employee performance further and overall organizational performance (Frangieh & Rusu, 2021; Xie et al., 2018).

In the last few decades, leadership has received much attention from scientists and practitioners in various organizational management (Fries, Kammerlander, & Leitterstorf, 2021; Zafar, Irum, Almulla, Almajid, & Ali, 2021). Several types of leadership styles generally discussed are focused leadership, structural initiation leadership, horizontal/vertical leadership, servant leadership, and transformational and transactional leadership (Bergman, Rentsch, Small, Davenport, & Bergman, 2012). Of the various leadership styles, transformational leadership and transactional leadership are the most popular leadership styles in the field of organizational management (Baafi, Ansong, Dogbey, & Owusu, 2021; Tyssen, Wald, & Spieth, 2014).

Although there are general findings that transformational leadership is more powerful in influencing employee performance than transactional leadership (Abu Nasra & Arar, 2020), this research is more directed toward transactional leadership for several reasons, namely (1) Transactional leadership is one of the most popular leadership styles and has an influence on employee work behavior (Abdelwahed, Soomro, & Shah, 2022); (2) Transactional leadership tends to be based on exchange relationships (economic and social) between leaders and employees, whereas transactional leadership encourages employee motivation through the use of reward systems; (3) Transactional leaders focus on setting clear goals by clarifying the relationship between rewards given and expected performance and providing feedback to keep employees focused on getting their work done. Furthermore, employees give obedience to the leader (by showing work productivity, high loyalty, and commitment to the organization) and receive tangible rewards as a form of appreciation for their contribution to the

[+] **Corresponding author**. Tel.: +6285343709228; *E-mail address*: cvningsri186@gmail.com

ISSN: 2247-6172
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organization; (4) Referring to the view that the positive influence of transactional leadership on employee performance is rooted in Path-Goal theory (Vecchio, Justin, & Pearce, 2008) and social exchange theory (Young, Glerum, Joseph, & McCord, 2021), this suggests that leaders transactional knowing well about the needs and wants of employees, and clarifying how these needs and wants can be met as a reasonable reward for improving employee performance; and (5) Employees in blue-collar workplaces are relatively less controlled, very sensitive emotionally, and lack self-control, so leaders need to respond with rewards-punishments so that the complexity of the work can be resolved properly. Podsakoff, Bommer, Podsakoff, and MacKenzie (2006) assert that reward and punishment from transactional leaders have been considered the main determinants in changing employee attitudes, perceptions, and behaviors to achieve organizational goals and success. When the desired reward (and unwanted punishment) depends on the work result, the employee's personal interest is expected to provide energy and enthusiasm to produce quality performance in accordance with the organization's expectations.

In accordance with the contradictory research results used as the basis for building this research, some of the research gaps include the results of research conducted by Ahmed, Haider, and Alvi (2021); Donkor (2021); Nazarian, Soares, and Lottermoser (2017); Ozcan and Ozturk (2020) prove that transactional leadership has a significant positive effect on employee performance. Meanwhile, the results of other studies show that transactional leadership has a significant negative effect on employee performance (Jia, Chen, Mei, & Wu, 2018; Veliu, Manxhari, Demiri, & Jahaj, 2017), and even transactional leadership does not affect employee performance (Baig et al., 2021; Jacobsen, Andersen, Bøllingtoft, & Eriksen, 2021).

2. Literature Review

2.1 Transactional Leadership

Burns (1978) introduced the transactional leadership model. Transactional leadership occurs when a person connects with others to achieve goals, namely through exchanging things of value, whether psychological, economic, or political (Burns, 1978). Burns remarked that while there was a shared objective between the two parties, there was no further development of the connection than the pre-existing benefits exchange. Nor is the relationship "binding" between the leader and the follower in an ongoing effort to achieve a higher goal.

Transactional leaders exchange values with followers to meet conditions that have been agreed upon by both parties, where followers meet the requirements proposed by the leader in exchange for rewards and praise or avoidance of punishment for failing to reach the goal (Ivey & Kline, 2010; Udin, Dananjoyo, & Isalman, 2022). Thus, transactional leadership appears realistic because it focuses on meeting specific goals or objectives (Aarons, 2006; Suhana, Suharnomo, Mas'ud, & Udin, 2019; Udin, Dananjoyo, & Isalman, 2022).

Northouse (2018) states that transactional leaders do not focus on employee personal development but on achieving goals. Transactional leaders focus on clarifying tasks, offering rewards for positive performance, and punishing poor performance that does not match the leader's expectations. Furthermore, transactional leaders also use "power" to influence followers to achieve desired results (Avery, 2004).

According to Bass (1985), transactional leaders motivate employees to achieve the desired results by (a) explaining the targets to be achieved by employees; (b) showing employees how to achieve these targets; (c) evaluating performance; (d) provide feedback on work results; and (e) provide contingent rewards if employees can achieve these targets. Politis (2002) views transactional leaders clarify employees' roles and determine what they must do to achieve the set targets. Leaders will respond to how well employees carry out their responsibilities and decide to reward or punish employees. Thus, transactional leadership can be applied in various situations and encourages employees to adhere to established standards of work practice (Aarons, 2006).

ISSN: 2247-6172
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2.2 Well-Being Support

Over the past few years, employee well-being has received much attention from positive organizational psychology scientists. Well-being is a broad concept that has developed as a research topic in recent decades (Keyes, Shmotkin, & Ryff, 2002). However, in terms of definition and measurement, employee well-being seems inconsistent because it has been analyzed from various multidisciplinary approaches (Franco-Santos & Doherty, 2017).

Using the conceptualization proposed by Warr in 1987, Grant, Christianson, and Price (2007) define well-being in the workplace as the overall quality of employees' experiences and functioning at work. Grant et al. (2007) concluded that there are three main aspects of employee well-being at work, which include well-being related to physical, psychological, and well-being related to social functioning. However, according to Topp, Østergaard, Søndergaard, and Bech (2015), the psychological well-being of employees is an approach that is often applied in various research fields.

The concept of employee well-being support should include "pleasure" and "purpose" (Robertson & Cooper, 2010). It describes the extent to which employees experience positive feelings at work and the extent to which they feel meaning and purpose in their work. Robertson and Flint-Taylor (2008) view the psychological well-being of employees at work as a psychological state that includes affective and purposive experiences experienced by employees when they work.

Based on the psychological approach, employee well-being includes hedonic well-being and eudemonic well-being (Guest, 2017). Hedonic well-being is defined as pleasure-seeking and pain avoidance, which refers to subjective feelings of well-being. While eudemonic well-being refers to the extent to which individuals perform their functions in totality (I. Robertson & Cooper, 2011).

Organizations can influence the well-being of their employees by modifying dimensions of the organizational context, such as hours worked, assignments, or rewards (Danna & Griffin, 1999). Both employees and organizations can benefit from increased well-being. On the other hand, organizations and employees can experience poor well-being due to negative influences due to having less productive employees, performing poorly, making unfair decisions, and being more vulnerable to absenteeism from work (García-Cabrera, Lucia-Casademunt, Cuéllar-Molina, & Padilla-Angulo, 2018).

2.3 OCB-Altruism

The term "altruism" has been used in various concepts, both in philosophical, biological, psychological, and economic reviews, which aim to introduce conceptual differences in finding the right meaning of altruism (Pol, Weikard, & Ierland, 2012). In an organizational context, organizational citizenship behavior (OCB)-altruism is defined as any discretionary behavior to assist a particular person in completing an organizationally relevant task or problem (Organ, 1988; Suwanti & Udin, 2020; Udin & Yuniawan, 2020).

Guinot, Chiva, and Mallén (2015) define altruism as (1) an attempt to improve the welfare of others; (2) voluntary; (3) intentional, which is intended to help others; and (4) not expecting external rewards. Thus, in general, altruism can be defined as a sense of empathy and concern for the welfare of others through acts of voluntary assistance. Altruism encourages individuals to give unconditional help to others (Hwang & Bowles, 2012). Kim, Lee, and Bonn (2016) view that in reciprocal altruism, a person engages in altruistic behavior with the expectation that others will do the same.

A behavior can be said to be altruistic when the behavior is able to provide benefits to others. Altruistic behaviors include entertaining, sharing, telling, and helping behaviors. This can be exemplified through the behavior of comforting depressed people, responding to their emotional needs, sharing interesting things with known and unknown individuals, and helping others to achieve their goals (Lozada, D'Adamo, & Fuentes, 2011).

Altruistic behavior can be direct (Leider, Mobius, Rosenblat, & Do, 2009), indirect (Fiedler & Sarstedt, 2010), and general (Parra-López, Bulchand-Gidumal, Gutiérrez-Taño, & Díaz-Armas, 2011). Immediate altruism occurs when someone helps someone who has helped them. On the other hand,

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indirect altruism happens when people assist others who have helped others. The general altruistic behavior manifests itself in sharing knowledge with anyone regardless of the type of person (Ma & Chan, 2014).

Altruism encourages bonds and a shared identity with other members (Fiedler & Sarstedt, 2010). Altruism frequently plays a crucial role in boosting commitment and creating favourable conditions for knowledge exchange in the workplace (Ma & Chan, 2014). Due to their altruistic behavior toward other members, people are more likely to be loyal to an organization. In contrast, people's commitment to membership in a group is influenced by the altruistic behavior they display toward other members. By increasing group attachment and commitment, altruism encourages reciprocal bonding (Chung & Koo, 2012).

According to Islam et al. (2012), altruism forges bonds between employees. Employees experience a sense of intimacy and connection with others they believe to be receptive to and supportive of their needs. Altruism can lead to feelings of empathy and understanding of others' interests, which can strengthen interpersonal relationships and lessen conflict within an organization. Altruism can encourage employees to experiment with new processes or activities, such as dialogue, participatory decision-making, interaction with the external environment, risk-taking, and encouraging learning within the organization (Guinot et al., 2015).

2.4 Employee Performance

Employee performance is related to the productivity level of employee work behavior, which aims to determine whether the work results are in accordance with the expected goals (Yang & Hwang, 2014). In achieving performance, the goals and responsibilities of employees and the organization are measured from the perspective of performance appraisal (Chen & Silverthorne, 2008).

According to Tseng and Huang (2011), employee performance can be measured using several methods, such as work quality, quantity, timeliness, productivity, training effectiveness, employee behavior, and characteristics. Green and Heywood (2008) stated that two aspects influence employee performance: the personal quality of employees, which includes knowledge, skills, capacities, and motives, and the employee work environment that reflects job expectations, performance feedback, workspace, tools, and incentives.

Amarneh, Al-Rub, and Al-Rub (2010) suggest that employee performance comes from the interaction of three factors: skills, effort, and the nature of working conditions. Skills include the knowledge, abilities, and competencies of employees. At the same time, the effort reflects the various activities undertaken to complete the job. Working conditions refer to adapting and adjusting conditions to increase employee productivity.

3. Hypotheses Development

3.1 The Effect of Transactional Leadership on Employee Performance

Bass (1985) states that the dimensions of the transactional leadership style include contingent rewards, active management by exception, and passive management by exception. In transactional leadership, through contingent rewards, leaders can provide employees with material and psychological rewards that depend on their performance, as stated in contractual obligations. Transactional leadership can encourage employee engagement, loyalty, commitment, and performance by providing contingent rewards. Furthermore, through management by exception, transactional leaders are always careful to ensure that employees meet predetermined work standards (Aga, 2016).

Transactional leaders monitor individual employee and team performance to anticipate mistakes and take corrective action when necessary. Transactional leaders also prefer to interact with employees on an exchange basis, where employees are explicitly rewarded according to the achievement of predetermined goals (Bass & Avolio, 2000). Transactional leaders offer extrinsic rewards and corrective

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actions to encourage employees to work harder (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008).

Transactional leaders seek to inspire employees by considering their interests of employees through promises, rewards, and praise. Such a leader motivates employees to realize the expected level of performance by helping them recognize responsibility for the task, identify goals and develop the confidence to achieve the expected level of performance (Lo, Ramayah, & Min, 2010). Transactional leadership emphasizes the exchange and reward for necessary action between the leader and employees. This is related to the path-goal theory, where there is a series of bargains and exchanges made by leaders and employees, which can encourage motivation to pursue the goals set (Tyssen et al., 2014). Transactional leadership becomes more precise and effective in achieving the desired results when there is a clear set of goals.

The results of other studies show that transactional leadership style has a significant effect on knowledge-sharing behavior (Masa'deh et al., 2016; Riaz & Khalili, 2014); OCB (Mekpor & Dartey-Baah, 2017; Suliman & Obaidly, 2013); and employee performance (Ahmed et al., 2021; Ma & Jiang, 2018; Ozcan & Ozturk, 2020).

H1: Transactional leadership has a positive effect on employee performance

3.2 The Effect of Employee Well-being Support on Employee Performance

The results of L. Rhoades and R. Eisenberger (2002); Yavas, Karatepe, and Babakus (2010) show that organizational support is positively related to work behavior and attitudes. In their empirical study, Eisenberger, Armeli, Rexwinkel, Lynch, and Rhoades (2001) found a positive relationship between perceived organizational support and task performance. Furthermore, the results of Chiang and Hsieh (2012); Miao and Kim (2010) prove that the organizational support felt by employees positively affects the performance they display in the organization.

The concept of employee well-being support in the workplace promotes profits for organizations with a healthy workforce (I. T. Robertson & Cooper, 2010). The dynamics of employee well-being in the workplace are seen as very important in understanding the different domains that influence the quality of life in the workplace. Many studies have been carried out by economists, sociologists, and psychologists to understand employee well-being (Cox, Eaton, Ekas, & Enkevort, 2015).

Currie (2001) views employee well-being in the workplace as related to employees' physical and mental health. This means that employees must work in a stress-free and physically safe environment. Bakke (2005); Anglin et al. (2018) support this view and state that well-being can be associated with promoting an environment that can produce interesting, useful, stimulating, and enjoyable work and proposes that the workplace should be full of joy to promote optimal performance.

Research evidence shows that employees' high levels of physical and psychological well-being play an important role in driving successful performance (Robertson & Cooper, 2010; Verner-Filion, Vallerand, Amiot, & Mocanu, 2017). In the study of Wright and Cropanzano (2004) for 5 years, which examined the relationship between psychological well-being and employee performance, it was found that there was a positive relationship between the level of psychological well-being and employee performance. This study shows that employees with high levels of psychological well-being appear to perform better than employees with low psychological well-being.

H2: Employee well-being support has a positive effect on employee performance

3.3 The Effect of OCB-Altruism on Employee Performance

Researchers have concentrated on the relationship between OCB and employee performance and organizational performance (Bolino, Turnley, & Bloodgood, 2002). According to Cohen and Vigoda (2000), and Putri, Udin, and Djastuti (2019), OCB positively affects an organization; namely, it can increase productivity, efficiency, effectiveness, and the allocation of organizational resources.

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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OCB-altruism is seen as a tendency to think about the welfare and rights of others, feel concerned and empathize with them and act in a way that benefits them (Shahab, Sobari, & Udin, 2018; VanEmmerik, Jawahar, & Stone, 2005). Individuals are seen as more collaborative, empathetic, altruistic, and motivated by showing concern for the welfare of others (Brown et al., 2009; Rynes, Bartunek, Dutton, & Margolis, 2012). Altruistic behavior can help create a positive expectation of the behavior or intentions of others, which can allow the trust to develop among organizational members. Therefore, the presence of OCB-altruism in the organization can help to generate greater organizational trust (Guinot et al., 2015).

OCB-altruism also allows employees to cooperate in business transactions (Diep, Cocquyt, Zhu, & Vanwing, 2016; VanVugt, Roberts, & Hardy, 2007) and provides a mechanism that allows cooperative behavior to occur in the organization (Hardy & VanVugt, 2006), as well as improving employee performance (Reimers, Magnuson, & Chao, 2017). Böhm and Regner (2013) revealed that OCB-altruism encourages individuals to help others (charitable giving) in the public sector. In addition, they prove that the consequences of pro-social activities can improve employee performance.
H3: OCB-altruism has a positive effect on employee performance

4. Research Methodology

This type of research is to test hypotheses to strengthen the theory that is used as a foothold. In this regard, explanatory research emphasizes the relationship between research variables by testing hypotheses (Kumar, 2005).

4.1 Population and Sample

The population in this study were all employees (at the staff, frontline, and supervisor levels) who worked in the 11 registered stone milling companies in Central Java - Indonesia, totaling 1,060 people. The sampling technique in this study used purposive sampling, which is a technique for determining the research sample by considering the considerations of the elements or categories in the research population (Sugiyono, 2010). The sample categories selected in this study are: (a) The research sample has a minimum of 3 years of working experience; (b) The research sample has a minimum education qualification of high school (SMA); (c) The research sample is actively involved in the work.

The distribution of questionnaires in this study was 300 files to employees who worked in 11 stone milling companies in Central Java Province. The data was gathered from October 2021 to February 2022. Based on this, the total number of successfully returned questionnaires was 229 files (response rate of 76.33%).

After the selection process and questionnaire verification were carried out, 17 questionnaire files were unsuitable for processing for several reasons. For example, the questionnaire was not filled out completely and did not meet the requirements of respondents (i.e., it did not include years of service and education level). Therefore, the number of valid and appropriate questionnaires used in this study was 212.

The demographic characteristics of the respondents in this study can be described using several main characteristics, such as gender, age, education level, and years of service. This can be seen in Table 1.

Table 1: Demographic Data of Respondents

No.	Category	Description	Frequency	Percentage (%)
1	Gender	Male	171	80.66
		Female	41	19.34
2	Age	< 31 years	88	41.51
		31-40 years	82	38.68

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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		41-50 years	37	17.45
		> 50 years	5	2.36
3	Educational level	SMA	136	64.15
		D3	9	4.24
		S1	64	30.19
		S2	3	1.42
4	Work experience	3-5 years	117	55.19
		6-10 years	58	27.36
		11-15 years	20	9.43
		> 16 years	17	8.02

Table 1 shows that most of the respondents are male, as many as 80.66% (171 people), and the remaining 19.34% (41 people) are female. This indicates that employees who work in stone milling companies are more dominated and in demand by males than females. Females are more likely to face more complex career choices than males, and many females who work in milling companies do not see company management as the right path for them to build a better career.

From the point of view of age, most respondents are under 30 years old, as many as 41.51% (88 people), 38.68% (82 people) are between 31 to 40 years old, 17.45% (37 people) are between 41 to 50 years old, and 2.36% (5 people) are over 51 years old. This shows that employees working in stone milling companies are dominated by individuals under the age of 30, who always appear willing to take risks and listen to others when there are problems in the work and organization.

In terms of education, the majority of respondents are high school educated as much as 64.15% (136 people) and the remaining 30.19% (64 people) have a bachelor's degree, 4.24% (9 people) have D3 education, and 1.42% (3 people) educated S2. In terms of tenure, most respondents have worked between 3 to 5 years; namely, 55.19% (117 people) and the remaining 27.36% (58 people) have worked between 6 to 8 years, as much as 9.43% (20 people)) have worked between 9 to 11 years, and as many as 8.02% (17 people) have worked more than 12 years. This indicates that employees who work in stone milling companies have little work experience as professionals.

4.2 Measures

Transactional leadership is measured using three dimensions: contingent rewards, active management by exception, and passive management by exception. Transactional leadership measurement was adapted from Judge and Piccolo (2004); Bass and Riggio (2006), which involves 10 questions, namely contingent reward (covering 4 questions such as assessing work based on results, being responsible for work achievement, giving rewards, and encouraging work performance), active management by exception (covering 3 questions such as setting standards to work, focusing on work success, and assessing work errors), and passive management by exception (includes 3 questions such as reacting to work problems, correcting work errors, and providing sanctions for work mistakes). All questions have a scale of 1 – 10, where point 1 states "strongly disagree" to 10 points states "strongly agree."

Employee well-being support is measured using 4 question items adapted from Faragher, Cooper, and Cartwright (2004) with a scale of 1 – 10 points, namely ensuring job security, providing decent salaries and benefits, encouraging comfortable supervision, and facilitating a balance between employee's personal life and work.

OCB-altruism is measured using 3 indicators: taking time to help co-workers, volunteering to help co-workers with work-related problems, and giving sincere respect to co-workers. OCB-altruism measurement involves 3 questions adapted from Kirkman, Chen, Farh, Chen, and Lowe (2009) with a scale of 1 – 10 points.

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Employee performance in this study was measured using 4 indicators: work quality, quantity, timeliness, and productivity. Employee performance measurement was adapted from Tseng and Huang (2011), which involved 4 questions. All questions have a scale of 1 – 10, where point 1 states "strongly disagree" to 10 points states "strongly agree."

4.3 The Technique of Data Analysis

The data obtained in this study were statistically processed using Structural Equation Modeling (SEM) with the AMOS 24 software package. SEM is a model that allows for testing a more complicated circuit or network model (Hair Jr, Babin, & Krey, 2017). SEM-based analysis techniques are very useful in developing and extending theories, especially when second-order and even third-order factors provide a better understanding of relationships that may not appear at first (Astrachan, Patel, & Wanzenried, 2014).

5. Results

5.1 Confirmatory Factor Analysis of Endogenous Variable

The estimation results of the measurement of the endogenous variable model are shown in Table 2 using the Maximum Likelihood estimation method. The calculation results of the endogenous variable (i.e., employee performance) show that the criteria for RMSEA, CMIN/DF, GFI, AGFI, TLI, CFI, and NFI provide a conformity index that is in accordance with the recommended limits. However, on the criteria for the p-value of chi-square, it is still considered marginal because its value is below the specified limit. Overall, from the various conformity indices, it can be concluded that the measurement model on the proposed endogenous variable is fit or has a good fit because there is seven goodness of fit criteria that have been fit, so there is no need to eliminate indicators from the endogenous variable.

Table 2: Conformity Index of Endogenous Variable Model

The Goodness of fit Index	Cut-off Value	Model Result	Evidence
χ^2 –Chi-Square	68.669	72.235	Expected a small value
df		51	
χ^2-Significance Probability (P-Value)	≥ 0.05	0.027	Marginal
RMSEA	≤ 0.08	0.044	Fit
CMIN/DF	≤ 2.00	1.416	Fit
Goodness of Index (GFI)	≥ 0.90	0.947	Fit
Adjusted Goodness of Index (AGFI)	≥ 0.90	0.919	Fit
Tucker-Lewis Index (TLI)	≥ 0.90	0.984	Fit
Comparative Fit Index (CFI)	≥ 0.90	0.988	Fit
Normed Fit Index (NFI)	≥ 0.90	0.961	Fit

Based on Table 2, the measurement model of the endogenous variable has met the fit criteria. Therefore, the next analysis stage can be carried out on the validity of endogenous variables to ensure that all indicators are constructs of the latent variables studied.

Table 3: Loading Factor Value of Endogenous Construct

	Estimate
EP1 <--- Employee Performance	0.878
EP2 <--- Employee Performance	0.731
EP3 <--- Employee Performance	0.724

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Review of Applied Socio- Economic Research
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	Estimate
EP4 <--- Employee Performance	0.855

Table 3 shows that the Employee Performance variables' loading factors are more than 0.5. The largest factor loading value is on the EP1 indicator with a value of 0.878, while the smallest factor loading value is on the EP3 indicator with a value of 0.724. So it can be concluded that all indicators that reflect each of these endogenous variables are unified indicators being studied.

5.2 Confirmatory Factor Analysis of Exogenous Variables

The estimation results of the exogenous variable model measurement are shown in Table 4. Contingent reward, active management by exception, and passive management by exception are still included in the exogenous CFA because they are second-order observed data for transactional leadership. The results of the calculation of exogenous variables show that the p values of chi-square, RMSEA, CMIN/DF, GFI, AGFI, TLI, CFI, and NFI have met the criteria of the conformity index according to the recommended limit. Therefore, from the various conformity indices, it can be concluded that the measurement model on the proposed exogenous variable is fit or has good suitability, so it is not necessary to eliminate indicators from exogenous variables.

Table 4: Model Fit Index on Exogenous Variables

The Goodness of Fit Index	Cut-off Value	Model Result	Evidence
χ^2 –Chi-Square	93.945	88.907	Value is small
df		73	
χ^2-Significance Probability (P-Value)	≥ 0.05	0.099	Fit
RMSEA	≤ 0.08	0.032	Fit
CMIN/DF	≤ 2.00	1.218	Fit
Goodness of Index (GFI)	≥ 0.90	0.945	Fit
Adjusted Goodness of Index (AGFI)	≥ 0.90	0.921	Fit
Tucker-Lewis Index (TLI)	≥ 0.90	0.989	Fit
Comparative Fit Index (CFI)	≥ 0.90	0.991	Fit
Normed Fit Index (NFI)	≥ 0.90	0.954	Fit

Based on Table 4, the exogenous variable measurement model (i.e., transactional leadership, employee well-being support, and OCB-altruism) has met the fit criteria. Therefore, the next analysis stage can be carried out on the validity of exogenous variables to ensure that all indicators are constructs of the latent variables studied.

Table 5: Loading Factor Value of Exogenous Constructs

			Estimate
Contingent Reward	<---	Transactional Leadership	0.589
Active Management by Exception	<---	Transactional Leadership	0.616
Passive Management by Exception	<---	Transactional Leadership	0.329
CR1	<---	Contingent Reward	0.836
CR2	<---	Contingent Reward	0.815
CR3	<---	Contingent Reward	0.818
CR4	<---	Contingent Reward	0.765
AM1	<---	Active Management by Exception	0.762
AM2	<---	Active Management by Exception	0.858

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			Estimate
AM3	<---	Active Management by Exception	0.844
PM1	<---	Passive Management by Exception	0.858
PM2	<---	Passive Management by Exception	0.878
PM3	<---	Passive Management by Exception	0.880
EW1	<---	Employee Well-being Support	0.860
EW2	<---	Employee Well-being Support	0.874
EW3	<---	Employee Well-being Support	0.839
EW4	<---	Employee Well-being Support	0.865
OCB1	<---	OCB Altruism	0.905
OCB2	<---	OCB Altruism	0.960
OCB3	<---	OCB Altruism	0.864

Based on the loading factor values in Table 5, the Contingent Reward variables' loading factors are more than 0.5. The largest factor loading value is on the CR1 indicator with a value of 0.836, while the smallest factor loading value is on the CR4 indicator with a value of 0.765. The loading factor of the Employee Welfare Support variable is more than 0.5. The largest loading factor value on the EW2 indicator with a value of 0.874, while the smallest loading factor value on the EW3 indicator with a loading factor value of 0.839. The loading factor of the Active Management by Exception variable is more than 0.5. The largest loading factor value is on the AM2 indicator with a value of 0.858, while the smallest loading factor value is on the AM1 indicator with a loading factor value of 0.762. The Passive Management by Exception variable's loading factor is more than 0.5. The largest loading factor value is on the PM3 indicator with a value of 0.880, while the smallest loading factor value is on the PM1 indicator with a loading factor value of 0.858. So it can be concluded that all the indicators in the exogenous variables are a single indicator being studied.

Table 6: Causality Test Results on the Overall Fit Model

	Unstandardized Estimate	S.E.	C.R.	P
Transactional Leadership → Employee Performance	0.226	0.089	2.548	0.011
Employee Well-being Support → Employee Performance	0.291	0.104	2.786	0.005
OCB Altruism → Employee Performance	0.109	0.048	2.263	0.024

Keterangan: *** sama dengan p < 0.001

Tabel 7: Standardized Regression Weights

	Standardized Estimate
Transactional Leadership → Employee Performance	0.299
Employee Well-being Support → Employee Performance	0.252
OCB Altruism → Employee Performance	0.141

The explanation of the tested hypothesis on several direct effect coefficients in Tables 6 and 7 can be described as follows.

1. The direct effect of transactional leadership on employee performance shows a p-value of 0.011 ($p<0.05$), so it can be concluded that transactional leadership significantly affects employee performance. The path coefficient value, which is positive with estimated regression weights of 0.226 and a standardized regression weights coefficient of 0.299, can be interpreted that better transactional leadership will affect employee performance improvement.

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Review of Applied Socio- Economic Research
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2. The direct effect of employee well-being support on employee performance shows a p-value of 0.005 ($p < 0.05$), so it can be concluded that it significantly affects employee performance. The path coefficient value, which is positive with estimated regression weights of 0.291 and standardized regression weights coefficient of 0.252, it can be interpreted that the better the support for employee well-being, it will affect the improvement of employee performance.
3. The direct effect of OCB-altruism on employee performance shows a p-value of 0.024 ($p<0.05$), so it can be concluded that OCB-altruism significantly affects employee performance. The path coefficient value, which is positive with estimated regression weights of 0.109 and standardized regression weights coefficient of 0.141, can be interpreted that the better OCB-altruism, it affects employee performance improvement.

6. Discussion

6.1 The Effect of Transactional Leadership on Employee Performance

This study found that transactional leadership has a positive and significant effect on employee performance. Transactional leaders organize and manage employees through contractual obligations that focus on rewards and punishments for meeting existing performance standards. By using rewards and punishments directly related to performance, transactional leaders can increase employees' sense of autonomy and competence because they feel they are being treated fairly and given the freedom to think about how to complete performance.

Transactional leadership encourages work motivation among employees through a reward system, as well as focusing on setting clear goals by providing positive feedback to keep employees focused on completing assigned tasks. Furthermore, employees obey the leader (by demonstrating high work productivity and organizational commitment) and receive appropriate rewards for their work (for example, in the form of financial benefits).

The results of this study are in line with the findings of previous research, such as Saeed and Mughal (2019), Ozcan and Ozturk (2020), and Donkor (2021), that transactional leadership has a positive and significant effect on employee performance.

6.2 The Effect of Employee Well-being Support on Employee Performance

This study found that employee well-being support had a positive and significant effect on employee performance. This finding is consistent with previous research that higher employee well-being support leads to employee satisfaction, which in turn increases employee engagement and better work productivity (Abdullah, Huang, Sarfraz, Ivascu, & Riaz, 2021; Luna-Arocas & Danvila-del-Valle, 2021).

Employee well-being support in the workplace generally includes the organization's attention to the overall quality of the employee's experience and functioning. According to Human Relations Theory, higher employee well-being support, usually based on job satisfaction assessments (cognitively and evaluatively), results in positive organizational behavior. Employees' feelings of high job satisfaction make it possible for them to use their full potential to be totally involved in work, which leads to higher work productivity in the workplace (Johari & Jha, 2020).

Employees with higher levels of job satisfaction with well-being support facilitated by the organization tend to be high-performing and committed to their work. They identify themselves as individuals who are responsible for the success of their work by continuously building job resilience and avoiding burnout and work stress which have an adverse effect on performance (Chen & Fang, 2016; Li & Hasson, 2020).

Employees who get high well-being support from the organization have various aspirations, goals, and hopes to perform the best work in the organization. Therefore, they play a central role in work and organization by using various knowledge, skills, and past experiences and always focusing on

ISSN: 2247-6172
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improving work by cultivating positive behavior in the workplace to produce high-quality work (Vereen, Rasdorf, & Hummer, 2016).

6.3 The Effect of OCB-Altruism on Employee Performance

This study found that OCB-Altruism had a positive and significant effect on employee performance. Employees who have high OCB-altruism have a strong psychological attachment to the organization that encourages them to contribute to the organization both formally and informally by showing their best performance. They also tend not to measure and calculate the costs incurred in helping colleagues produce quality work. These findings are in line with the conclusions of previous researchers, such as Dwomoh, Gyamfi, and Luguterah (2019), Sani and Ekowati (2020), Trong, Thuy, Huong, Thanh, and Linh (2021) who prove that OCB-altruism has a positive and significant effect on employee performance.

With OCB-altruism, employees can provide positive benefits to co-workers, for example, helping new employees feel more comfortable at work, paying attention and empathy to them, acting in ways that benefit them, and helping co-workers with difficulties at work. Through OCB-altruism, employees share their professional experiences with others, actively help each other solve work-related problems, and avoid conflicts within the organization. This has implications for improving the work performance of each employee for the better and more productive.

7. Conclusion

Based on the results of data analysis, findings, and discussion, this study concludes that transactional leadership has a positive and significant effect on employee performance. The dimension of transactional leadership that plays the most dominant role is a contingent reward (i.e., on the indicators of Encouraging work performance, Responsible for employee work achievements, Giving awards, and Assessing work based on work results). Active management follows this by exception dimension (i.e., indicators of determining work standards, assessing work errors, and focusing on work success). Then it is followed by the passive management by exception dimension (i.e., on indicators of correcting work errors, providing sanctions for work errors, and reacting to work problems). Transactional leadership is the main driver to improving employee performance in the organization to achieve long-term success of the organization. By using contingent rewards, transactional leadership can increase employee productivity and work quality to appear more innovative and creative in the organization. It also greatly encourages the personal growth of employees and the organization's growth as a whole.

This study also confirms that employee well-being support has a positive and significant effect on employee performance. The indicator of employee well-being support that plays the most dominant role is facilitating a balance between work and personal life, followed by ensuring job security, providing decent salaries and benefits, and encouraging comfortable supervision. This finding is consistent with the views in organizational support theory by Linda Rhoades and Robert Eisenberger (2002) and social exchange theory by Liao, Liu, Li, and Song (2019) that provide positive support to employees (for example, providing high and competitive, recognition), able to encourage employees to work hard and produce better performance.

This study further shows that OCB-Altruism has a positive and significant effect on employee performance. The indicator of OCB-altruism that plays the most dominant role is volunteering to help co-workers who have work-related problems, followed by taking time to help and giving genuine respect to co-workers. Employees who have high OCB-altruism have a strong psychological attachment to the organization that encourages them to contribute to the organization both formally and informally by showing their best performance.

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7.1 Limitations of the Study

Some limitations need to be mentioned in this study. First, this study only explores one business sector in Central Java - Indonesia, namely the stone milling sector. Therefore, it may not be wise to generalize the results and findings of this study to all sectors in Central Java - Indonesia. Second, in terms of respondents' answers to open-ended questions, this study found that around 8% of respondents did not respond to open-ended questions related to the OCB-altruism variable and support for employee well-being in their organization. This is due to respondents' lack of free time to complete the answers to these open-ended questions.

7.2 Suggestions for Future Research Direction

Some suggestions and recommendations need to be presented in this research for the sustainability and effectiveness of future research. Firstly, this study recommends testing the same construct in all sectors (construction, health, education, hospitality, non-profit, and MSME) in Central Java, allowing the entire population to be presented more effectively. Secondly, this study only uses one method of data collection and analysis, namely quantitative. Therefore, future research needs to use mixed methods, namely quantitative and qualitative, so that the results are able to provide a deeper understanding to the reader. Mix methods research needs to be done to analyze and confirm the point of view of top management (namely the director) on employee perceptions of transactional leadership variables and employee welfare support. Lastly, future research needs to examine the role of other leadership styles and other variables (such as leader-follower fit, gender-matched leaders and followers, and individual orientation) that can help improve employee performance. In addition, the longitudinal method will allow a better observation of cause-and-effect relationships between variables. Longitudinal research is considered very important to be carried out in the future to see the consistency of the findings of the influence of leadership interventions on improving employee performance.

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Manuscript received: 27.06.2022

Manuscript received in revised form: 07.10.2022

Manuscript accepted: 10.10.2022

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
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Does the government expenditure on education and family income boost educational expansion? Lesson from panel FMOLS

Khusaini Khusaini [1†]

Heni Cahya Ramdani [1], Estu Niana Syamiya [1], and Iis Aisyah [2]

[1] Syekh-Yusuf Islamic University, Indonesia
[2] Siliwangi University, Indonesia

Abstract: *One of the problems of education development in Indonesia is the slow distribution of education, especially in the regions. Understanding the relationship between government spending on education and family income helps improve education equity in the region and formulate appropriate education policies. The study examines the effects of government expenditure in education, family income, poverty, and control variables on the primary, junior, senior secondary of net enrollment ratio and means years of schooling. This study utilized secondary data from regencies/municipalities in Banten Province over the period from 2000 to 2019. The panel FMOLS model found that family income contributed significantly to increasing the education expansion as measured by net enrollment rate in primary, junior, senior high schools and mean years of schooling for all models. Poverty only affected the net enrollment rate for junior high school, senior high school, and mean years of schooling in the long term. However, the findings regarding the impact of education spending on educational expansion are ambiguous. Furthermore, it depended on the method utilized. This research contributes to providing local government policy input to improve education services through increasing family income, reducing poverty, and providing educational opportunities for the school-age population to obtain equal education services.*

Keywords: educational expansion, government spending, mean years of school, school participation

JEL Codes: H76; I22; I25

1. Introduction

Educational expansion is one of the crucial issues widely studied by researchers in economics, education, and policymakers. It has also become an essential agenda in achieving sustainable development goals, especially the achievement of the population at the primary and secondary education levels by 2030 (United Nations, 2016). Moreover, educational expansion impacted society (C. Li, 2019), increased income, economic growth, and income inequality (Sabur et al., 2021; Wolhuter, 2019).

Many previous studies have focused on educational expansion (Hardy & Marcotte, 2020; Kuno et al., 2021; Takahashi, 2011; Truong et al., 2021; Valente, 2019) in the contexts of non-formal education participation (Ansong et al., 2018; Asadullah & Maliki, 2018; Dubois et al., 2012; Heymann et al., 2014; Ho et al., 2019). Expanding education is generally considered a major investment in human resources. One way

[†] **Corresponding Author**: +62-81389821777; Address: Cluster Puri Asri I/C5 Jl. Irigasi Sipon RT. 04/01 Poris Plawad Utara Cipondoh Kota Tangerang – Banten, Indonesia 15141
E-mail address: khusaini@unis.ac.id

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

of determining human resources produced by schooling is by measuring students' attendance in school, the net enrollment ratio, and the mean years of schooling (UNESCO-UIS, 2014).

The determinants of educational expansion include the government expenditure in regional education characteristics (Heymann et al., 2014), cash transfer, and region (Dubois et al., 2012; Muralidharan & Prakash, 2017). Other factors were age, household characteristics, and region (Asadullah & Maliki, 2018), infrastructure, number of classes, teachers, and residence (Ansong et al., 2018), academic and ethnic performance (Ho et al., 2019), family resources (Iddrisu et al., 2017a), environment and school characteristics (Takahashi, 2011). Furthermore, the authors combine variables formed by individual data into aggregate data from previous studies. The authors will examine government expenditure in education, family income, and poverty on educational expansion.

Concerning government expenditure in education, the previous study found a positive correlation between the increased allocation of government expenditure in education and educational expansion (Baldacci et al., 2004; del Granado et al., 2007). Meanwhile, Doriza et al. (2013) found that a specific fiscal instrument called the education special allocation fund (Indonesia, DAK) had a more significant impact than a general instrument. It had a relatively more tangible effect on reducing disparity in access to secondary education. Another study concluded that fiscal decentralization in the education sector significantly affected student attainment as measured by consistently rising figures (Salinas & Solé Ollé, 2009) and educational participation (Heymann et al., 2014; Listianawati, 2012).

However, not all research results on the correlation between government spending and the distribution of education are statistically significant. For example, (Harbison & Hanushek, 1992) found no significant correlation between government expenditure in education and educational performance. In addition, Anand & Ravallion (1993) showed that per capita government expenditure on education had contributed to the literacy rate in the country. However, government expenditure in education was ineffective in increasing educational attainment and gross enrollment rate (Singh & Shastri, 2020) and school dropouts (Rajkumar & Swaroop, 2008).

Family income has an essential role in improving children's education because families must allocate a portion of their income to finance their education. A common problem in developed countries (for example, Indonesia) is the low income received by their parents. As a result, the family has economic instability, which prevents children from completing higher education (Hardy & Marcotte, 2020). Furthermore, family income correlates significantly to the distribution of education because it is directly related to the number of school fees (Hübner, 2012; Suwandana, 2018). Other studies also conclude that family welfare significantly affects education participation (Iddrisu et al., 2017b; Tharmmapornphilas, 2013).

Conventionally, poverty means a lack of income. The measurement of poverty in various ways reaches the minimum calorie level consumption (Tilak, 2018). Poverty will fail to meet such basic needs as education, an issue related to equality and accessibility. The state, in this case, must provide a universal school system and finance it (Siddiqui, 2017). A previous study by Duarte et al. (2018) also concluded that reducing poverty between generations can be done through education. Also, previous studies showed that poverty significantly affected education participation rates (Khairunnisa et al., 2015; Rahmatin & Soejoto, 2017). However, other studies found that poverty did not correlate with school participation rates (Listianawati, 2012). Also, del Granado et al. (2007) demonstrated that poverty and working school-age children were obstacles to school participation.

This study re-examines previous research findings and incorporates the variable of poverty in the analysis model. It also contributes to the literature on the impact of poverty on educational expansion. In addition, to avoid potential bias in estimating the correlation between government expenditure on education, family income, and poverty it maintains cross-sectional interdependence and panel heterogeneity as essential issues.

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
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Furthermore, the variables' stationarity is very important when dealing with long-term panels. This study examines the long-term relationship between government expenditure on education, family income, and poverty with the educational expansion at the regional macro level in Banten from 2000 – 2019 from 6 districts/cities. Then it tackles the problems of heterogeneity and serial correlation. It also assesses the differences in education expansion by area and gender. Previous research has not utilized the panel Fully Modified Least Square (FMOLS) model for this topic. It is crucial to do so as an effort to reduce the inconsistency of research results. The research findings accelerate the increase of education level and equitable access to educational institutions. The community has the same right to education provided by the government and the private.

2. Literature Review

The authors' idea of equity in education is that everyone is born equal and has the right to quality education, enabling them to develop and master the knowledge and essential skills to lead a fulfilling life. As long as one works hard, one has equal chances to succeed (Guo et al., 2019). Meanwhile, equity in education makes primary and higher education more accessible to all residents. The role of government through its regulations and budgeting is one of the factors in improving education because the government should provide educational services for the community through the allocation of the budget for the education sector. Government expenditure on education is a form of long-term investment. It is part of improving people's welfare and ultimately affects economic growth. In other words, the government creates demand for education through the availability of schools and additional educational assistance (Khairunnisa et al., 2015). Therefore, the proper allocation and distribution of the budget will impact social and economic development, especially the future development of the education sector (Yun & Yusoff, 2019).

Baldacci et al. (2004) found a positive correlation between increased allocation budget in health and education in 86 developing countries with increased education and health outcomes. Del Granado et al. (2007) notably revealed that government expenditure played a role in determining the educational expansion in Indonesia. A similar study in 38 countries by Maozhong & Hua (2011) showed that 11.46% of government investment/budget in the education sector significantly affected educational inequality. However, it had a relatively more tangible effect on reducing disparity in access to secondary education. Another study concluded that fiscal decentralization in the education sector significantly impacted educational participation (Megawati, 2020; Zhou et al., 2020) and student attainment (Salinas & Solé Ollé, 2009). In contrast, the study of Rajkumar & Swaroop (2008) found that the correlation between government expenditure in education and school dropouts was not significant. Finally, a recent study found that public spending on education did not influence educational attainment (Singh & Shastri, 2020).

Badan Pusat Statistik (2018) stated that family income is income received by the family measured by expenditure per month per capita. The total household expenditure per capita is the measurement of household income variable (Iddrisu et al., 2017b). Improved income received by a population reflects increased welfare. Therefore, the income received plays an essential role in encouraging people to improve their education. The study by Maurin (2002) showed that income had three times a stronger effect than gender on the probability of grade repetition in primary school. These results indeed confirm the previous basic statistical data.

A study in Indonesia conducted by Megawati (2020) found that the level of household welfare significantly affected student enrollment. Other research by Iddrisu et al. (2017a) strengthened previous research which supported that parental income played an important role in increasing educational expansion. The same result was reported by Linan & Chen (2009) on the importance of family income in influencing access to further education. The high income of parents meant greater parental participation in education to reduce dependence on a limited government budget. Parents have a responsibility for education in the

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

community. The involvement of parents is not only in the form of funding but also in collaborating with the government to improve education services for the community, especially those who cannot afford it.

The poverty experienced by students who are currently studying may lead to incomplete education, due to limited funds (Hardy & Marcotte, 2020). Meanwhile, Takahashi (2011) stated that certain geographical conditions might benefit poor households with more affordable education. His research shows that affluent homes could increase secondary school enrollment, especially with children from poor households. Other researchers conclude that the low welfare of the home economy influences the education level of women and men, and this situation certainly contributes to intergenerational poverty transfer (Duarte et al., 2018). An increase in poverty in one region will be followed by a decrease in school enrollment rates (Khairunnisa et al., 2015; Rahmatin & Soejoto, 2017). Suwandana (2018) also found that the percentage of poor people was correlated with equal distribution of education, although not very strongly. Not all studies confirmed that poverty reduction contributed to increased educational expansion. Some research reported contrary findings, in which an increase in poverty correlated to the rise in education participation rates (del Granado et al., 2007; Listianawati, 2012) and increase inequality in education (Khusaini et al., 2021).

3. Research Methodology

3.1 Data

The data in this study consist of various documents describing the senior high school net enrollment rate in Banten. We got the documents from governments' institutions in Banten Province, such as the Central Bureau of Statistics (Indonesian, BPS), Regional Development Planning Agency (Indonesian, Bappeda), Education and Culture Office, Central Bureau of Statistics of regencies and cities, Regional Working Unit (Indonesian, SKPD) of regencies and cities, and related agencies. The secondary data used in the study covered data from six regions: Lebak Regency, Pandeglang Regency, Serang Regency, Tangerang Regency, Tangerang Municipality, and Cilegin Municipality. As the Southern Tangerang Municipality and Serang Municipality were new autonomous regions, the authors combined the two with Tangerang and Serang Regencies. Meanwhile, the time-series data covered the period 2000 -2019.

3.1 Variables

The dependent variable in this study is educational expansion. The net enrollment rate in primary, junior, and senior high school and the mean years of schooling were used to calculate it. We selected the net enrollment rate (NER) over the gross enrollment rate (GER) because the NER can evaluate the population's timeliness in connection to prescribed age standards. Another advantage of using the high net enrollment rate variable was finding out the number of populations of standard age who utilized educational facilities provided by the government or the community. It could also measure the success of education development and measure equal access to education (UNESCO-UIS, 2014).

The *NER* has a weakness in its lack of estimation. Because students may enter school above the standard age group for various reasons such as starting school at an older age, repeating a grade, dropping out of school temporarily, and graduating early; hence the number is smaller than *GER* (UNESCO-UIS, 2014). Higher the educational expansion shows upper primary, junior, senior high school, and mean years of schooling. The dependent variables in this study are the primary, junior, senior high school, and mean years of schooling, while independent variables include government expenditure in education, family income, and poverty. The control variables include gender, number of schools, teacher-student ratio, and road infrastructure.

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
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3.2 Econometric model

Panel data regression analysis was a regression model that models the influence of predictor variables on response variables in several sectors observed from a research object over a certain period. Compared to other models, the advantages of the panel data model were heterogeneity in each unit, more information, and reduced multicollinearity. It also increases the degree of freedom, more efficiency, capturing the dynamics of change, measuring and detecting impacts, more complete, and biases produced more minimum (Baltagi, 2005). The basic model is:

$$y = \alpha_o + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \varepsilon \quad (1)$$

This model assumed that behavior between individuals was the same over some time so that α and slope β are the same for each individual, i.e., $\alpha_1 = \alpha_2 = ... = \alpha_n$and $\beta_1 = \beta_2 = ... = \beta_n$.

While models with individual effects could be written, namely parameter estimation (α and β), taking into account the nature of individual effects α, regardless of the structure of covariant error term. The model is:

$$y_{it} = \alpha_{it} + \beta_{it} + \varepsilon_{it} \quad (2)$$

where *i* is the number of units cross-section and *t* is the number of series time.

Based on the equation of (2), the author specified a panel data analysis of the educational expansion modified from a model built of a probability model with macro data (Arshed et al., 2018; Chakrabarti & Joglekar, 2006; Singh & Shastri, 2020) to find out the long-term correlation. Therefore, we can write the equation as follows:

$$Y_{it} = \varphi_0 + \varphi_1 LOG_INCOME_{it} + \varphi_2 LOG_EB_{it} + \varphi_3 POV_{it} + \varphi_4 G_{it} + \varphi_5 LOG_TS_{it} + \varphi_6 ROAD_{it} + \varphi_7 LOG_TSR_{it} + v_{it} \quad (3)$$

The Y_{it} is the *NER* of primary school, junior high school, or senior high school net enrollment ratio. The Y_{it} is also the mean years of schooling in area *I* in period *t*. The LOG_GEE_{it} is the government expenditure in education in region *i* period *t*. The LOG_INCOME_{it} is a parents' income in region *i* in period *t*. The POV_{it} is the poverty in region *i* in period *t*. The G_{it} is the proportion of the female population in region *i* in period *t*. The TS_{it} is the number of primary schools, junior high schools, or senior high schools in region *i* in period *t*. The $ROAD_{it}$ is the road infrastructure in region i in period t. The TSR_{it} is the teacher-student ratio of primary school, junior high, or senior high school in region *i* in period *t*. The v_{it} is the error term in the panel model, φ_0 is the constant, φ_i is the coefficient, *t* is period 2000 -2019, and *i* = 1, 2, ..., 7.

3.3 Unit Root Test

The unit root tested the stationarity of the data because there was an element of time in the panel data. If a time series data was not stationary, the data faced a unit root problem. It would violate the *OLS* assumption by variables with a constant mean and variance in time. It causes autocorrelation problems in the data (Wooldridge, 2018). The presence of this property in the panel data can be confirmed by using the panel unit root test. Determining whether the data is stationary or non-stationary, this study will utilize *LLC* (Levin et al., 2002), *IPS* (Im et al., 2003), *ADF* Fisher, and *PP* Fisher (Fisher, 1934; Maddala & Wu, 1999). Because the data was not stationary (unit root), it rejected the null hypothesis, while the alternative hypothesis was that the variable was stationary.

3.4 Panel Cointegration Test

After testing the unit root with I(1), as a result, we obtained a cointegration relationship and produced a valid and efficient estimate. The type of test used is the panel cointegration test (Kao, 1999). The residual must be *I*(0) if the variable was cointegrated. If the variable was not cointegrated, on the other hand, the residual is *I*(1). Kao (1999) and Pedroni (1999) utilized panel data to extend the (Engle & Granger, 1987) approach for

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

testing cointegration. The Kao test followed the same basic approach as the Pedroni test but determined a specific cross-section using the intercept and homogeneous coefficients of the first-stage regressor.

The cointegration testing used the Dickey-Fuller and Augmented Dickey-Fuller tests (Kao & Chiang, 2001). The expected result is a probability p-value <0.05, so it stated that the variables used are cointegrated with each other or have a long-term correlation. This situation involves panel data analysis using the Fully Modified Ordinary Least Square (*FMOLS*) model.

3.5 Panel Fully Modified Ordinary Least Square (FMOLS) Model

The FMOLS panel is a model that may predict the long-term equilibrium correlation between independent variables. This model was initially conceived by (Phillips & Hansen, 1990) to assist in the optimal analysis for the cointegrated regression. The *FMOLS* model considered the impact of autocorrelation and endogeneity in cointegration correlation. The panel *FMOLS* model uses semi-parametric correction for the variance-covariance matrix to eliminate problems caused by endogeneity, serial correlation, cross-sectional random differences, and produce consistent analyzes (Pedroni, 2000, 2004; Phillips & Hansen, 1990). This study uses a grouped approach within the *FMOLS* panel, as stated by (Pedroni, 2000, 2004), who proposes a grouped mean *FMOLS* estimator that is averaged over individual cross-sectional FMOLS estimates:

$$\hat{\beta}_{FG} = N^{-1} \sum_{i=1}^{N} [(\sum_{t=1}^{T} X_{it} X_{it}')^{-1} \sum_{t=1}^{T} (X_{it} y_{it} - \lambda_{12i}')] \quad (4)$$

Pedroni (2000) stated that the grouped mean estimator offers the desired property to provide a consistent estimate of the cointegration vector sample. It meant given the heterogeneity in cointegration relationships. (Pedroni, 2004) estimated the asymptotic covariance matrix for this estimator by calculating the variance of the mean of the individual estimates:

$$V_{FG} = N \sum_{i=1}^{N} \left(\widehat{\omega}_{1.2i} \frac{1}{T^2} \sum_{t=1}^{T} X_{it} X_{it}' \right)^{-1} \quad (5)$$

Keep in mind that the baseline t-statistic obtained using this covariance estimator differs from the t-statistic proposed by (Pedroni, 2000), which incorporates individual statistics across the cross-sectional dimensions. The advantage of using the *FMOLS* panel model is the ability to control the presence of endogeneity, serial correlation, and heterogeneity between individuals and produce consistent analysis results (Pedroni, 2000).

4. Results and Discussion

Table 1 reported summary statistics to describe the aggregate data observed between 2000 - 2019, covering the mean and standard deviation of the variables. The mean value of students enrolled in primary, junior, and senior secondary schools were 94.51, 68.47, and 45.92, respectively. It meant that the primary, junior, and senior secondary enrollments rates were 94.51%, 68.47%, and 45.92%. The mean years of schooling were 8.01 years, which meant that the population aged 15 years and over had an average length of schooling of 8.01 years.

Table 1: Summary of Statistic

Variables	Obs	Mean	Std. Dev	Max	Min
NER_PS	120	94.51	2.92	100.00	83.18
NER_JS	120	68.47	13.29	85.92	29.17
NER_SS	120	45.92	14.57	77.20	14.37
MYS	120	8.01	1.72	10.88	5.30
LOG_INCOME	120	5.68	0.33	6.30	4.99
LOG_GEE	120	5.48	0.62	6.32	3.30

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

POV	120	8.43	5.05	32.46	3.03
G	120	49.28	2.27	58.99	41.43
LOG_TSPS	120	2.87	0.29	3.15	2.19
LOG_TSJS	120	2.29	0.29	2.79	1.69
LOG_TSSS	120	2.11	0.33	2.79	1.38
ROAD	120	1.36	2.03	8.81	0.06
STR_PS	120	25.77	8.96	54.45	12.89
STR_JS	120	19.78	6.52	36.70	8.59
STR_SS	120	15.67	3.95	29.28	9.05
STR	120	20.04	5.41	34.72	10.62

Note: NER_PS = net enrollment rate in primary school, NER_JS = net enrollment rate in junior high school, NER_SS = net enrollment rate in senior high school, mys = mean years of schooling, LOG_INCOME = logarithmic transformation of family income, LOG_GEE = transformation of the logarithm of government spending on education, POV = poverty, AFM = average of family member, LOG_TSPS = logarithmic transfomation in number of primary school, LOG_TSJS = logarithmic transfomation in number of primary school, LOG_TSJS = logarithmic transfomation in number of primary school, LOG_TSSS = logarithmic transfomation in number of primary school, STR_PS = total primary school student-teacher ratio, TSR_JS = total junior high school student-teacher ratio, TSR_SS = total senior high school student-teacher ratio, TSR = total student-teacher ratio.

Table 1 also showed that the average government expenditure in education (*LOG_EB*) was only 5.48% 0r IDR 30,2 billion, less than 20% of the total regional expenditure as stipulated in the Regional Government Revenue and Expenditure (Indonesia, APBD) of the regencies/municipalities in Banten. The average family income (*LOG_INCOME*) was IDR 478 thousand during 2000 – 2019. The poverty (*POV*) was the poor people in the regencies/municipalities 8.43%, while the variation in the number of poor people was still relatively high. The female population aged over ten years is 49.28% on average, meaning that the female population is smaller than the male population. Meanwhile, the average number of primary schools and equivalent are 741 units, junior high schools and equivalent are 195 units, and high school and equivalent are 129 units. The average length of roads in the good category is 230 kilometers. The teacher-student ratio of primary, junior, and senior high school and equivalent means that each teacher guides 26, 20, and 16 students, respectively.

This study investigates the dynamic relationship between government expenditure in education, family income, and poverty with the educational expansion (measured by net enrollment and mean years of schooling). In this context, the method used is panel cointegration estimation. To overcome the homogeneity problem, the researchers used the unit root test as suggested by (Im et al., 2003). After confirming that there was no homogeneity problem and the variables were in the order of interest. We conducted a cointegration test. It determined whether the variables were cointegrated or not.

The null hypothesis in the IPS, ADF-Fisher, and PP-Fisher test statistics is that the variable includes a unit root at a level *I*(1). Table 2 below shows the results of the unit root test:

Table 2: The Results of Panel Unit Root

Variables	*IPS*		*PP*		*ADF*	
	Level	First Difference	Level	First Difference	Level	First Difference
NER_PS	-1.962**	-15.916***	28.981***	484.634***	24.600**	169.439***
NER_JS	-0.240	-9.579***	13.229	134.894***	13.363	88.769***
NER_SS	2.585	-8.346***	4.146	128.147***	3.875	80.814***
MYS	-3.333***	-7.811***	27.539***	292.311***	31.205***	71.510***

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

LOG_GEE	-4.343***	-12.143***	62.734***	116.544***	45.046***	122.594***
LOG_INCOME	1.660	-11.036***	12.445	206.917***	3.327	103.312***
POV	-2.802***	-11.231***	36.095***	126.545***	25.899**	107.079***
G	-19.009***	-7.220***	357.098***	323.324***	71.641***	62.555***
AFM	-6.995***	-10.127***	141.786***	370.413***	65.919***	96.865***
LOG_TSPS	-1.452	-6.897***	21.166**	76.472***	18.681	63.922***
LOG_TSJS	1.135	-9.546***	14.751	103.410***	5.636	87.083***
LOG_TSSS	-1.295	-8.293***	5.264**	91.362***	21.041**	77.701***
ROAD	-0.556	-7.989***	15.351	113.908***	17.807	73.447***
STR_PS	-1.933	-9.667***	22.336**	131.046***	20.329*	92.813***
STR_JS	-3.392***	-5.431***	22.800***	154.918***	32.314**	55.354***
STR_SS	-2.126**	-6.649***	25.895**	96.819***	23.369**	65.908***
STR	-2.524***	-8.987***	17.802	97.464***	24.872**	83.613***

*Note: *** denotes the significance level at 1%. ** denotes the significance level at 5%. IPS = Im, Pesaran, & Shin, PP = Phillips-Perron, ADF = Augmented Dickey-Fuller.*

Based on these results, the unit root variables at a level *I*(1) were junior high school and secondary school net enrollment rate, family income, number of schools, road infrastructure, and the teacher-student ratio at the primary school level (see Table 3). As a result, the variables were not stationary, and spurious regression problems could occur if a static regression model like OLS were applied. However, the test results of all variables are confirmed to be stationary in the first difference *I*(0).

Furthermore, we would evaluate the cointegration relationship between the dependent and independent variables. The residual cointegration test (Kao, 1999) was utilized to test the cointegration relationship. The test results are in the following Table 4:

Table 4: Kao's Panel Cointegration Test Results

Model	Statistic	t-statistic	p-value
Mean Years of Schooling	ADF	-4.249	0.000
	Residual Variance	0.092	
	HAC variance	0.063	
NER Primary School	ADF	-5.291	0.000
	Residual Variance	8.574	
	HAC variance	2.184	
NER Junior High School	ADF	-4.504	0.000
	Residual Variance	36.261	
	HAC variance	17.381	
NER Senior High School	ADF	-5.316	0.000
	Residual Variance	20.402	
	HAC variance	14.253	

Table 4 illustrated that the test results based on Kao's panel cointegration test model of the four models showed a probability value of less than 0.05. As a result of the findings, all models rejected the null hypothesis of no cointegration. Thus, there was a long-term equilibrium correlation between the independent and dependent variables, and the regression estimation would produce a stationary residual. The long-term coefficients of the independent variables were calculated using the FMOLS group mean, pooled, and pooled weighted estimators after we found the cointegration correlation.

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

The authors used *FMOLS* panel analyzed to examine the effect of the government expenditure in education, family income, gender, and control variables on the expansion of education in Banten. The effect resulting from this test was a long-term effect. The authors use the pooled, pooled weighted, and group means methods. In this analysis, the educational expansion variable is measured by the net enrollment ratio in primary school, junior high school, senior high school, and the mean years of schooling. The results of the model are in the following table 5:

Table 5: Long-run Elasticity Results with Panel FMOLS Analysis of the NER_PS Model

Independent Variable	Dependent variable: net enrollment rate in primary school		
	Pooled	Pooled weighted	Grouped
LOG_GEE	-1.452	-0.595***	2.506***
	(0.951)	(0.088)	(0.906)
LOG_INCOME	11.226***	8.579***	3.047**
	(1.444)	(0.051)	(1.379)
POV	0.109	0.071	0.345***
	(0.087)	(0.099)	(0.141)
G	0.449***	0.349***	0.249
	(0.138)	(0.081)	(0.181)
LOG_TSPS	-19.108*	-17.428***	3.742
	(9.731)	(0.064)	(8.762)
ROAD	-0.109	0.023	-7.136
	(0.200)	(0.045)	(17.641)
STR_PS	0.035	0.036	0.017
	(0.033)	(0.051)	(0.024)
R^2	0.4552	0.4677	

*Note: * sig. = 10%, ** sig = 5%, *** sig. = 1%.*

Table 5 contained the results of the elasticity of the long-term correlation between government expenditure on education which was negative for the pooled method (not significant), pooled weighted (significant of 1%), and positive for the weighted model (significant of 1%). These results meant that government expenditure on education had an ambiguous effect on educational expansion in primary school. The coefficient of elasticity found was between -1.451 to 2.506. On the other hand, the elasticity coefficient of family income was positive between 3.047 to 11.226 and significant (1% and 5%) in all cases. Therefore, there was a unidirectional correlation between family income and educational expansion in primary school. Thus, the higher the family income, the higher the education expansion in primary school. Meanwhile, the long-term correlation between poverty and education expansion in primary school was positive and significant (1%) only in the pooled method.

Table 6: Long-run Elasticity Results with Panel FMOLS Analysis of the NER_JS Model

Independent variable	Dependent variable: net enrollment rate in junior high school		
	Pooled	Pooled weighted	Grouped
LOG_GEE	-11.662***	-7.431***	6.439***
	(3.373)	(0.099)	(1.932)
LOG_INCOME	33.979***	23.254***	9.541**
	(6.923)	(0.054)	(4.275)
POV	-0.856***	-0.593***	-0.792***
	(0.317)	(0.102)	(0.286)

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

G	2.452***	1.851***	0.017
	(0.538)	(0.082)	(0.306)
LOG_TSJS	13.227	22.755***	30.327***
	(9.604)	(0.053)	(11.040)
ROAD	0.265	0.318***	17.245
	(0.768)	(0.042)	(22.337)
STR_JS	-0.156	-0.091	-0.097
	(0.143)	(0.068)	(0.069)
R^2	0.7859	0.7842	

*Note: * sig = 10%, ** sig. = 5%, *** sig. = 1%*

Table 6 illustrated that in the long term, the government expenditure on education harmed the net enrollment rate in junior high school and has a significance of 1% with the pooled and weighted *FMOLS* panel model, while the grouped model was positive. It meant that government expenditure on education increased, so the enrollment rate in junior high school decreased. On the one hand, government expenditure on education increased the enrollment rate in junior high school. Meanwhile, the elasticity coefficient of family income was 9.541 to 33.979 and significant at 1% and 5%. This result meant that an increase in family income would increase the net enrollment rate in junior high school in the long term. The poverty elasticity coefficient also had a significant negative effect on the net enrollment rate in junior high school. The coefficient value obtained was -0.856 to -0.593 and is significant at 1%. This result found a decrease in poverty in the long term, increasing the enrollment rate in junior high schools in Banten.

Table 7: Long-run Elasticity Results with Panel FMOLS Analysis of the NER_SS Model

Independent variable	Dependent variable: net enrollment rate in senior high school		
	Pooled	Pooled weighted	Grouped
LOG_GEE	7.974***	-3.165***	1.066
	(2.994)	(0.087)	(1.502)
LOG_INCOME	28.624***	22.369***	26.065***
	(7.760)	(0.059)	(4.243)
POV	-0.283	-0.116	-0.572**
	(0.279)	(0.093)	(0.257)
G	1.675***	1.316***	0.135
	(0.433)	(0.080)	(0.345)
LOG_TSSS	20.403**	16.775***	-0.023
	(8.788)	(0.043)	(5.949)
ROAD	0.489	-0.001	-13.914
	(0.638)	(0.043)	(23.865)
STR_SS	0.867**	0.500***	0.399***
	(0.205)	(0.065)	(0.110)
R^2	0.8941	0.8959	

*Note: * sig = 1%, ** sig. = 5%, ***sig = 1%.*

The three *FMOLS* panel models (see Table 7) showed that the long-term correlation between government expenditure and enrollment rate in senior high school was ambiguous. It got different results; the pooled model showed a positive long-term correlation (significant of 1%). The weighted model showed a negative correlation between two variables with a significance level of 1%, whereas the grouped method did not. The elasticity of family income coefficient was 22,369 to 28,624 and significant of 1%. It meant that an increase in family income would increase the net enrollment rate in senior high school in the long term. The poverty elasticity

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

coefficient also had a significant negative effect on the net enrollment rate in senior high school. The coefficient value was -0.572 (grouped model) and significant of 5%. This result found a decrease in poverty in the long term, increasing the enrollment rate in senior high schools in Banten.

Table 8: Long-run Elasticity Results with Panel FMOLS Analysis of the MYS Model

Independent variable	Dependent variable: mean years of schooling		
	Pooled	Pooled weighted	Grouped
LOG_GEE	-0.642***	-0.529***	-0.205*
	(0.221)	(0.093)	(0.116)
LOG_INCOME	2.449***	2.129***	1.822***
	(0.513)	(0.058)	(0.380)
POV	-0.039**	-0.033	-0.039*
	(0.019)	(0.092)	(0.021)
G	-0.055*	-0.008	0.112***
	(0.032)	(0.081)	(0.025)
LOG_TSSS	-1.252**	-1.078***	-0.922*
	(0.624)	(0.043)	(0.508)
ROAD	0.019	0.062	2.306
	(0.046)	(0.042)	(2.241)
STR	-0.044***	-0.045	-0.016**
	(0.013)	(0.070)	(0.007)
R^2	0.9535	0.9540	

*Note: * sig. = 10%, ** sig. = 5%, *** sig.= 1%.*

Table 8 illustrates that in the long term, government expenditure on education is inversely correlated with educational expansion as measured by the mean years of schooling and is significant at 1% and 10%. It meant that a decrease in government spending on education could increase educational expansion. The elasticity coefficient of family income was 1.822 to 2.449 at 1% and 5% significance. These findings suggested that increasing family income would lead to increased educational expansion in the long term. Meanwhile, the poverty elasticity coefficient also negatively affected education expansion, except the pooled weighted model. The coefficient value obtained was -0.033 to -0.339, with a significance level of 5% and 10%. This result found that poverty reduction led to an increase in the educational expansion in Banten in the long term.

From the estimation results above, it could be seen that there was a negative and significant correlation between regencies/municipalities' government expenditure in education and the net enrollment rate of high schools in Banten. This negative correlation means that the higher the budget allocated by the regency/municipality government, the more likely it is for education to be more evenly distributed. This result was not in line with the previous research that the government budget in education contributed significantly to increased education participation rates (Ansong et al., 2018; Doriza et al., 2013; Dubois et al., 2012; Suryadarma, 2012). The present study results indicated that the higher the government expenditure in education, the lower the participation rate of high school/its equivalent school education. This result proved that the planning, management, and use of the budget in the regions under study were not accountable and on target.

As a result, children did not continue or dropped out of school, and the net enrollment rate of senior high school education decreased (Rajkumar & Swaroop, 2008). Another study also found that rapid enrollment increased in many developing countries since the government provided budgets for free education. However, the condition worsens the quality of education (Valente, 2019). The present study's findings also contributed

ISSN: 2247-6172, ISSN-L: 2247-6172
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to the theory of return on benefits and social costs of schooling (Todaro & Smith, 2015); however (Singh & Shastri, 2020) found the opposite. Therefore, in managing the government expenditure in education, the regency/municipality government must pay attention to transparency, accountability, and high accuracy. It is so because the government expenditure in education should be used to fund one of the basic services for children aged 16-18 years to increase the knowledge, skills, and productivity of future human resources in Banten.

The average household expenditure per capita income, which was proxied by the average household expenditure per capita, significantly affects senior high schools' net enrollment rate for all regencies/municipalities in Banten. These results proved the research hypothesis that is the higher the household income, the higher the net enrollment rate of senior high schools for all regencies/municipalities. It implied that senior high school would be more evenly distributed. This research was consistent with (Iddrisu et al., 2017b) reporting that household income increases education participation. Studies in Indonesia also showed that household wealth positively affected secondary school participation (Hardy & Marcotte, 2020; Suwandana, 2018).

This study was consistent with Tharmmapornphilas (2013), proving that high parental income encouraged high school participation. However, the results of this study do not correspond to those of (Davis, 2018) which demonstrates that increased parental income did not significantly increase educational participation because parents were more likely to allocate their income for health or even buying alcoholic drinks. Families that are economically more prosperous (high incomes) should allocate their income for their children's education investment at a higher level. Thus, increased family income can encourage residents to study longer to boost the equitable distribution of education in one region. The higher the income of households, the more likely parents can meet the needs of schools, including tuition fees, skills development, uniforms, stationery, and so on.

The increase in household income reflects an increase in household welfare (Hübner, 2012). The development of the population welfare can be measured by developing the income level, which was reflected in the amount and pattern of consumption expenditure. The higher the income is, the higher the level of expenditure will be. Furthermore, according to Engel's law, if there was no change in taste, the proportion of spending on food consumption will tend to decrease, along with increased income. Therefore, parents who have higher incomes could allocate their income for their children's education. Besides that, parents also have a responsibility for education in the community. The involvement of parents is not only in the form of funding but also in collaborating with the government to improve education services for the community, especially those who cannot afford it. Thus, the family also becomes the prominent owner of including a child or family member to get a formal education (Rahmatin & Soejoto, 2017).

The poverty variable affects significant negatively the senior high school net enrollment rate. This finding was consistent with studies concluding that the poorer the population, the lower the rate of participation in education (Rahmatin & Soejoto, 2017), and even the higher the dropout rates. In addition, parents are likely more to encourage their children, especially those aged 16 years and over, to work compared to spending time at school (Badan Pusat Statistik, 2014). del Granado et al. (2007) proved that poor people who don't have sufficient economic capacity could not afford to pay for their children's schooling because higher education also requires higher costs. However, Duarte et al. (2018) found that reducing poverty could increase education.

Families still have to pay for school fees, even though there is a school operational assistance fund policy (Indonesian, BOS), especially for senior high school. Education costs consist of direct costs and opportunity costs. Direct education costs incurred by parents include tuition/student services fees, re-registration, parent-teacher association, practicum/skills development, evaluation fees, supporting materials for school subjects,

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 89 - 105
URL: http://www.reaser.eu
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school and sports uniforms, textbooks, school equipment, transportation, and courses at school (Permana et al., 2010). Considering that the economic community is weak (it cannot afford school needs) who continue to study until entering high school level or will enter the level, it was very vulnerable to drop out of school. Therefore, the provincial government does not neglect poor high school students, but still schools. The local government can provide subsidy assistance, scholarships, and other school needs to keep schools safe.

This paper contributes to the literature on the correlation between public expenditure in education, family income, and poverty with the educational expansion. First, the increase in the education budget has not been directly proportional to the rise in the educational expansion covering districts/cities in Banten. Meanwhile, family income and poverty are the determinants of increasing educational expansion. A more rigorous analysis of the problem in addressing potential cross-correlation and heterogeneity issues in the panel is needed to bring the findings forward to realize how budget allocation and distribution, increasing family income and reducing poverty continue to be policy priorities by regency, municipality, or provincial governments. The findings are more reliable regarding using the *FMOLS* panel method in discussing cross-sectional correlation and panel heterogeneity. The current work has investigated a long-term relationship between the predictor variables with increased educational expansion compared to the traditional panel model. The *FMOLS* estimation technique has been used robustly to endogeneity and serial correlation.

5. Conclusions

We concluded that the educational expansion during the study period tends to increase with a higher average than national development. The educational expansion in north Banten is faster than in South Banten for all levels. We found that the government expenditure on education was ambiguous as a determinant of educational expansion. The resulting long-term correlation depends on the type of estimation method used. Family income significantly contributed to the educational expansion for all Banten indicators in the long term. In addition, poverty greatly affected secondary school and the mean years of schooling. It meant that poverty reduction must continue to be carried out in the long term to increase educational expansion.

The provincial government allocates the education budget for school operations, service improvement, education management, and campaigning the 12-year Compulsory Education Movement by involving education stakeholders and back-to-school programs. The problems or obstacles that increase the net enrollment rate in primary, junior, and senior high school include low family income, inadequate government expenditure in education, and less than optimal achievements of development goals. The reasons for children aged 7 - 24 years not to attend school include the inability to pay schooling fees, the requirement to earn a living and help parents, and getting married. The implication is that every family should allocate resources to benefit their children's education to go higher. In addition, families must also control their family demographics and be aware of the importance of education, especially for girls. The implication for local governments is to increase their role in managing the budget more efficiently, transparently, and accountably. Poverty is also an obstacle in raising the equal distribution of education in Banten. Therefore, the provincial government of Banten must make the poverty reduction agenda one of the priority development programs.

The research has limitations in variables, analytical models, and regional coverage. For example, the government expenditure in education variable is essential in increasing the educational expansion in Banten, but the research results are still inconsistent with the theory and previous studies. Therefore, we suggested that future research examine the impact of government expenditure on education on the senior high schools' net enrollment rate with more data series coverage. If necessary, it is recommended that future research test higher education participation rates. The researcher utilized panel DOLS (dynamic ordinary least square) models for the consistent study, which we strongly recommended. The extension of the research area is also important

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
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URL: http://www.reaser.eu
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because this research only involves regencies/municipalities in Banten. For this reason, future research can have more comprehensive coverage of regions in Indonesia and increase the amount of data used to yield better results.

6. Acknowledgments

We thank the reviewers for their comments on the reporting. We have not a conflict of interest in writing this article.

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Manuscript received: 14.12.2021
Manuscript received in revised form: 19.09.2022
Manuscript accepted: 04.10.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 106 - 120
URL: http://www.reaser.eu
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Critical evaluation of organizational structure and culture impact on the productivity of MFIs within the example of Agroleasing Leasing Credit Company LLC in Armenia

Aram Mkhitaryan[+]

European University in Armenia

Abstract: *Nowadays, to survive in the dynamic and global environment, companies need to have a strong organizational culture to have competitive production or service and flexibility for a quick response to environmental changes, which can be achieved by optimal organizational structure. It will impact the whole company's productivity and influence better performance and duties balance. The main purpose of this study is to identify the cultural and structural issues of the MFIs in Armenia, examine the best practice and give an improvement action plan. Based on the literature review, there are diverse studies that prove the relationship between the structure and culture of the company and their correlation with productivity. Actually, organizational structure and culture have a great influence on productivity, as the formal and informal communications between employees predict the level of their work efficiency. Being a driver of a company's execution, organizational culture, and structure is connected with different activity outcomes. While examining the current situation in Agroleasing, a few problems were identified in accordance with the productivity of the company. One of them is connected with the complicated organizational structure, as there are several positions that are not used in reality. The other was linked with the absence of cultural behavior; the employees are acting based on their preferences and professional level. These two issues had a serious impact on the performance of the company. Summarizing the best approaches of literature review and identifying the problems of Agroleasing, several test cases were organized in order to evaluate the current efficiency of the organizational structure and to understand the roots of employees' diverse behavior approaches. According to the results of the research, recommendations were highlighted for each sphere. A new organizational structure was offered in order to simplify the complexity of the duties. Also, servant leadership behavior was recommended as a way of creating a better internal cultural environment creation.*

Keywords*:* microfinance, culture, microloan, efficiency, productivity

JELCodes: G21, G24, G34, G38

[+] **Corresponding author**: *Email:* mkhitaryan.aram@yahoo.com, Department of Economics & Management, European University in Armenia, https://orcid.org/0000-0002-3368-9831

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 106 - 120
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

1. Introduction

Each company needs an evaluation framework with a specific end goal to know about its sub-framework tasks. Foundations, associations, and profit-seeking organizations with each mission, objective, or vision are in charge of responsibility to their founders. Financial institutions are no exceptions. Organizational culture and the best choice of structure of financial institutions play an irreplaceable role in an organization's growth. Poorly placed roles and weak management, incomprehensible culture, and unclear strategy of organization will bring job dissatisfaction and high level of turnover, which directly affects the productivity of the organization.

Nowadays, in a highly competitive environment, every organization needs to pay attention to the development of the culture and structure of the organization. According to Hogan *et al.* (2014), organizational structure and culture have a huge influence on the productivity of the company. Currently, the main organizational behavior issue that Agroleasing faces is weak organizational culture and structure. In fact, the team is small, and two specialists cover almost all duties concerning the clients' service, including the maintenance of current issues related to contracts, the provision of extracts, and the accountant's responsibilities. Besides, there is no internal policy that regulates the relationship between consumers and company workers.

Microfinance institutions (MFIs) are relatively small financial organizations that have historically focused on providing financial services to the low-income population in an effort to encourage them to take part in creating value in the economy. They differ from conventional financial institutions as they frequently offer loans without collateral and mostly serve low-income clients. Most significantly, while commercial banks' objective is to maximize their wealth, MFIs aim to maximize social wealth. This is why this study examines the ways to strengthen the productivity of MFIs by taking out issues concerning organizational structure and cultural environment. The example of Agroleasing has been chosen because of several reasons. The main reasons for choosing Agroleasing are the fact of its 20 years of activity, its purpose and strategy being close to international standards, as well as the average size of the company, which means that the approaches developed for this organization can be applied to a wider range of similar MFIs.

The banking system is the largest participant in the Armenian financial market, accounting for about 92% of the financial system's assets. As of December 31, 2020, 17 commercial banks and 44 MFIs were operating in the Republic of Armenia. As of June 1, 2021, one of the 44 MFIs registered in RA is a credit union; three of them are leasing organizations, one is a factoring company, two are refinancing credit unions, and the rest are universal credit organizations. Nine out of the 44 MFIs operating in Armenia are affiliated members of the Microfinance Center. As of the end of 2021, the credit portfolio of MFIs amounted to 298 billion AMD, which is equivalent to 620 million US dollars. 63% of the loans were provided in AMD, and a significant part of the foreign currency loans was made in US dollars. Compared to the previous year, the change in the volume of provided loans is insignificant, amounting to 0.02%.

Summarizing all the information mentioned above, the aim of this study is to examine the basic literature approaches to organizational structure and culture issues. Based on the integration of literature materials give, practical recommendations for the optimal changes which should be made in order to increase the level of knowledge management and productivity of Agroleasing.

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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2. Research Elaborations

The aim of this study is to find out the optimal structure and corporate culture model for MFIs operating in Armenia, which will increase the productivity of the organization. The objectives of this study are to identify the link between the culture and structure of MFIs, take out cultural and structural issues of the MFIs operating in Armenia, and to propose an optimal organizational structure and cultural environment for them.

The research methodology is based on qualitative analysis mixed with a quasi-experimental post-test method. The choice of this approach was due to the fact that the proposed study was explanatory in nature; In line with White & Sabarval's observations, the quasi-experimental study designs causal hypotheses using interventions based on predetermined factors (Kwendo, M. E. S., Omondi, O. C., & Kirwa, M. J., 2018).

The work can be claimed as one among the few that tries to arrive on the corporate culture and structure impact factors drawing upon both academic and practitioner perspectives. The primary responses obtained from MFIs employees enhance the credibility of our findings reported in the study.

Thematic qualitative analysis is made upon the interviews of the employees of MFIs operating in Armenia. Initially, 9 MFIs were contacted with anticipation of at least 1 respondent from each. Agroleasing employees were also interviewed, which was the company where a quasi-experimental study was done. The interviewees were credit specialists, 7 men, 5 women, all were 24-34 years age range. Respondents were asked about the challenges faced so far in the MFIs, which refer to existing traditions, issues concerning organizational structure within the organization, clarity of distributed roles, and contact with superiors. The transferability of the research is achieved by having qualitative data so that the researchers can compare one context to the other (Li, D. 2004).

It was noted from the respondents that the absence of clear corporate culture is a major challenge in the MFIs: We need to feel the culture in the organization, to go through the goals together with the top management (Credit Specialist, MFI). Clear tasks in each position of the structure is a key measure of success. (Senior Credit Specialist, a leading MFI). Another respondent also mentioned a lack of contact with managers for the clarification of details of specific tasks. The gap makes the working process unclear as the employee can't get guidance on the working process.

Both researchers and practitioners underline that the optimal organizational structure, culture, and strategy are key indispensable conditions for effective performance and high productivity for each company.

It should be noted that the activities of MFIs in developing countries, such as Armenia, are quite complex, as the needs of micro-entrepreneurs and other clients receiving microcredit are different, their financing is risky, and competition between microfinance organizations is high. Microfinance organizations support a wide range of activities, from start-up capital to educational programs that enable people to develop the skills needed to succeed as an entrepreneur (Mkhitaryan A., 2021).

Market transformations that have taken place since 2020, in turn, pose additional risks to financial institutions. At the same time, competition in MFIs is very high, and the RA regulatory framework is highly regulated, which on the one hand, is good from the point of view of risk management; on the other hand, it has a negative impact on the productivity of MFIs. Increasing competitiveness and productivity for financial

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institutions has gained significant importance in the context of recent economic and political changes. The discovery of an effective organizational structure and cultural model can be seen in terms of improving the productivity of the organization and is considered one of the most important preconditions for increasing the productivity of the financial institution. It, in turn, promotes the improvement of financial-operational indicators and increased competition of the organization (Mkhitaryan A., 2021).

Organizational structure, culture, and strategy are three important key resources that have been examined broadly in their relationship with organizational effectiveness. However, how they pass their impact on organizational productiveness of the company still needs to be studied (Zheng, W., Yang, B., & McLean, 2010).

Schminke *et al.* (2000) stated that organizational structure demonstrates a persisting configuration of tasks and activities. Moreover, as per Bergeron *et al.* (2004), the optimal choice of structure and roles will directly increase the productivity of the whole company. Anthony et al. (2001), Sullivan *et al.* (2003), and Hall *et al.* (2009) defined an organization as a group of people who work together to achieve the main goal, mainly focusing on getting profit.

On the other hand, culture is the next component that has been examined in correlation with company performance. Lee *et al.* (2005) found out that organizational culture has become a central concern of companies in their research for management efficiency. Organizational culture conceivably has an impact on the financial performance of the organization, as well as on strategic development (Vallejo-Martos, 2011).

Taking into account the above-mentioned reasons, as well as the fact that there are few pieces of research on this topic in the Republic of Armenia, at the same time the high competition in the financial sector, especially among MFIs, the research about corporate culture and structure of the MFIs becomes very relevant. Although organizational culture provides a relatively stable and frugal pathway to improving the performance of the firm, it has received little research attention, particularly in emerging industries such as microfinance.

In the framework of the article, the corporate culture and organizational structure of Agroleasing Leasing Credit Organization LLC (hereinafter referred to as Agroleasing) were examined, which enabled the acquisition of additional information and ensured the practical applicability of the research results. The choice of Agroleasing is due to the fact that the company is one of the oldest MFIs operating in Armenia, founded by the US Department of Agriculture Marketing Support Program and, despite the changes made over the years, has both Armenian and US-accepted management experience in Armenia.

Agroleasing was established in 1999. The company implemented the US Government's Leasing Program in general and the Financial Leasing Program in particular in the Republic of Armenia. From the first years of performance, Agroleasing has been implementing a large number of leasing and loan programs, financing mainly small and medium enterprises involved in agricultural production and processing. In addition, the company provides support to its clients by providing consultancy during the selection, installation, launching, and running of the equipment. The company has a small staff consisting of 11 permanent workers and 4 positions which are outsourced.

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Review of Applied Socio- Economic Research
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The company's mission is to promote small and medium-sized businesses in the Republic of Armenia through lending, finance, leasing, low-income families, and providing financial services to farmers, as well as loans to the most vulnerable, relatively low-income, and economically active population.

a. Structure and productivity

Nowadays, surviving in a dynamic and complicated environment, it is required organizations to have agility and flexibility in which the main factor is organizational structure, which is the principal force of change (Shafiee *et al.*, 2016). As per Storey *et al.* (2010) organization exists to achieve goals; goals are divided into tasks as the background for jobs; furthermore, jobs are grouped into departments, like accounting, sales, credit department, finance, and so on. Moreover, within each department, there are more variations between jobs and individuals' performance. The connections of departments lead to the formation of the organizational structure.

In practice, there are a lot of indicators which has an impact on organizational structure, like centralization and decentralization, formality, and complexity (Storey *et al*., 2010). According to Gounaris *et al.* (2013), conceptual model, formalization, and centralization of the structure of an organization can bring key account orientation management, relationship, and financial productivity outcomes.

Even though different discoveries about the connection between structure and knowledge management exists, a decentralized structure has regularly been viewed as a success accelerator. High centralization restrains communications among individuals in different positions and decreases the opportunity for career advancement (Gold *et al.*, 2001).

b. Culture and productivity

In spite of the vast number of research on the impact of culture on a company's productivity, there are few ideas in this field (Gillespie *et al.*, 2008). One reason for this was the difficulty in operationalizing the culture construct (Lee *et al*., 2004). There is a strong link between the culture of the organization and the level of productivity. Some other researchers in this field suggest that companies with a strong mission, a high degree of employee involvement, and internal consistency are the most effective (Denison *et al.*, 1995). As per Liden et.al (2014) and Dinh et al. (2014), an environment where participants share the understanding of prioritizing the needs of others above their own and assisting them, is characterized as servant culture. A later study by Mousavi et al. (2015) sought further evidence about authoritative culture, which has been considered like never before, and more consideration has been paid to the connection between several factors, for example, efficiency, hierarchical structure, job satisfaction, productivity, and organizational citizenship.

In contrast to researchers who prove a strong link between culture and organization productivity, other theorists support another hypothesis, which is about a lower connection between culture and performance (Heskett *et al.*, 1992; Chatman *et al*., 1994). Their studies, which have been conducted in different industries worldwide, show that organization's culture has an impact on short-term productivity. There were organizations with well-built cultures and weak output and vice versa, and there were found out 22 organizations with weak cultures and excellent productivity. This result revealed that there are different companies with disparate cultures, which have good performance due to business specificities.

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Review of Applied Socio- Economic Research
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Another specification of a company's culture is the difference between the cultures of countries, which results in different ways of effective organizational cultures. For example, Slovenia has characterized by well-structured and organized unions, strong worker associations, broadened remuneration contracts, and firm works councils, but in contrast with this theory, Estonia uses decentralized bargaining and much weaker union structures and workers' associations and narrow work councils (Psychogios et al., 2010).

3. Results and Discussions

There are different approaches concerning the best organizational structure and culture. Several researchers consider decentralization and free decision-making more effective; meanwhile, others bring real facts on the successes of strict cultural policy and centralization, as well as formality and non-formality inside organizations.

a. Recommendations on organizational structure

According to Zheng *et al.* (2010) and Boyce *et al.* (2015), organizational structure dimensions most frequently met are complexity, formality, centralization, and specialization. Examining these dimensions in borders of Agroleasing and also combining the data with the results of the interviews, the level of impact and the ways of improvement were identified (Figure 1).

Figure 1. *Organizational structure and culture impact on productivity*

Impact factor	*Impact level*	*Ways of improvement*
Complexity	***Low***	*Clear tasks*
Formality	***High***	*Paper-based orders*
Specialization	***Middle***	*Overload workers to job oriented multitask workers*
Centralization	***Middle***	*Participation in decision making*

Complexity means the number of undertakings or sub-frameworks in an association. Hage (1980) presented the attributes of hierarchical structure and said that the levels of these qualities are distinctive in different associations. This added to a long pace on examination of organization structure. Complexity does not have a big impact on performance. But still, it is very important to maintain clear tasks for employees. *Specialization* inside an association identifies with the degree that job positions are narrowly defined in terms of required skills, ability, and experience (Green et al., 2005). Specialists are experts in their areas but not necessarily in other areas. Currently, in Agroleasing, different types of duties from different aspects overload employees. According to test results, a cashier's performance is higher than the outcome of a credit

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Review of Applied Socio- Economic Research
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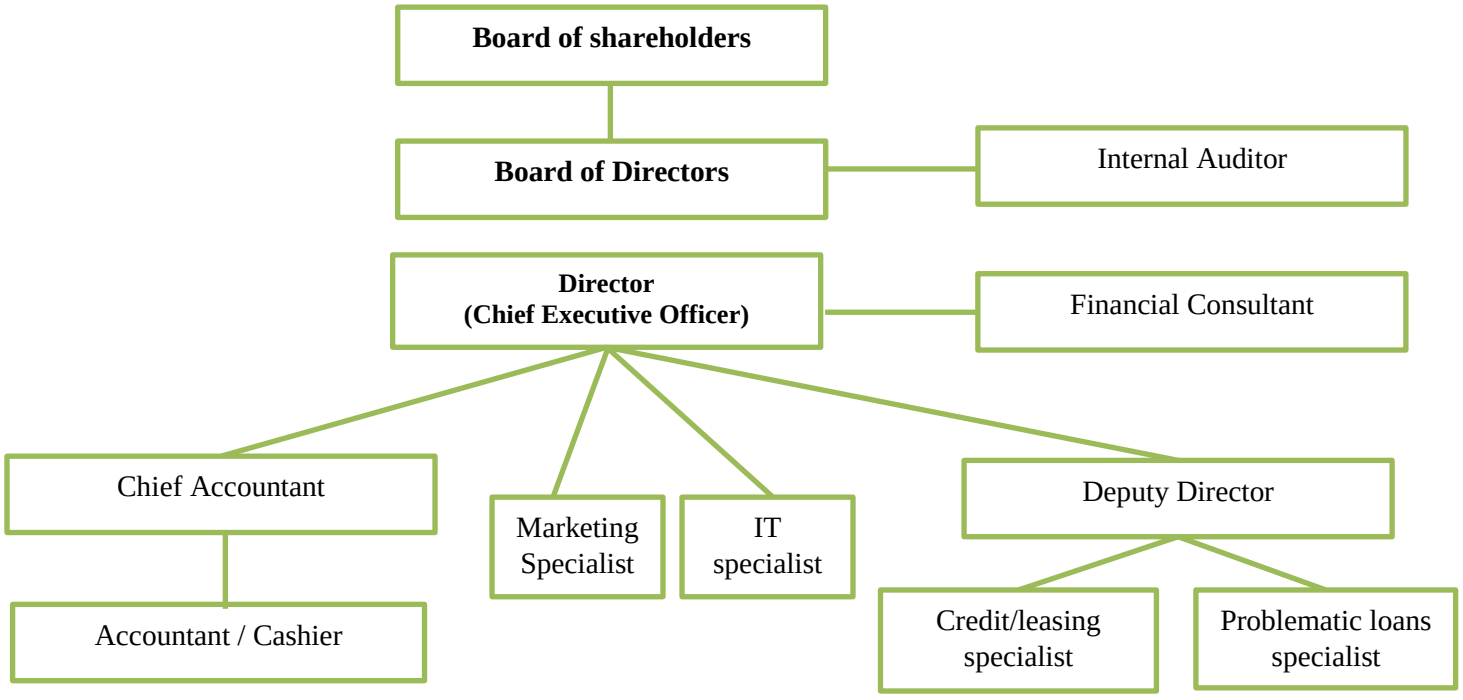
specialist that in parallel is responsible for diverse tasks like administrative duties. Taking into account these facts, it can be recommended to specify their responsibilities.

Formality focuses on the standard level of authoritative jobs. In a formal company, authoritative relations are clarified for workers in paper form and based on managerial levels and, if vital, the following changes are introduced by manager formally; however, in informal companies, hierarchical relations are shown verbally for workers, and if essential, are changed naturally (Zheng et al.,2010).

Currently, the organizational structure of Agroleasing is presented below.

Figure 2. *Agroleasing Leasing Credit Company LLC current organizational structure*



Taking into consideration the facts taken out from the literature, there are several issues in the organizational structure of Agroleasing which can affect work efficiency. In particular:

- The company's structure does not provide opportunities for employee advancement and career improvement,
- There is a position of Deputy Executive Director which is only involved in the management of credit operations. Besides, the position is vacant since its inception.
- The existing board of directors in the company consists of the employees of the company; thus the advantages of the corporate institution are not fully applied.
- An internal audit of the company revealed that all non-job-specific responsibilities are distributed among staff, leaving employees overworked and prone to work-life balance difficulties and job stress.

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Taking into account the literature review, it is also recommended that Agroleasing to simplify the structure and better clarify the responsibilities between positions. This will lead to clarity of tasks and functions of employees, which is important for increasing the productivity of the company.

According to RA legislation, such financial institutions as credit organizations (in our case, Agroleasing) must have corporate governance, which results in a centralized organizational structure. That is the reason why all MFIs operating in Armenia have a board of directors. As a result of the studies, it was found that the Boards of the MFIs are mostly formal in nature and fulfill the requirement of the law, and the MFIs did not fully reveal the positive effect of the regular and professional work of the board. As per Ssekiziyivu *et al.* (2018), the boards of directors of MFIs are responsible for ensuring healthy and prudent management by implementing an effective policy framework, and this is lacking in most MFIs operating in Armenia. Based on the above statement, it can be stated that the involvement of professional board members, independent from the core team of the organization, can significantly affect the productivity increase of the MFIs.

Table 1. *Highlighting problems and solutions regarding the structure of Agroleasing*

Issue	**Solution**	**Result**
Formal nature of the board of directors	Change in the composition of the board members	New strategy development, policy development
Complex structure	Specification of positions	Clarification of employee roles, balancing of overworked and underworked positions
Lack of career growth	Ensuring the growth of positions	Replacing positions in the structure with departments

Taking into consideration the literature review above, it is recommended to simplify the structure and better clarify duties among positions. Responders to the interviews also mention the necessity of having a simple structure. It will bring clear tasks and functions for employees, which is key to a better outcome and higher productivity of the company.

Overall, for improvement of organizational structure and culture in Agroleasing, it was offered to change the organizational chart and to develop servant culture. The implementation plans for both aspects are presented below.

According to RA legislation, banking institutions such as credit organizations (ex. Agroleasing) need to have corporate management, which brings to a centralized organizational structure. In fact, in Agroleasing, the company does not have Deputy Director or Financial Consultant. The structure is too complicated, so it needs to be simplified by replacing them with Administrative Assistants. Also, it is recommended to split the positions of cashier and accountant. Simplifying the roles of each employee will make their responsibilities clearer and will lead to an increase in their job satisfaction and performance. The recommended organizational chart is presented below.

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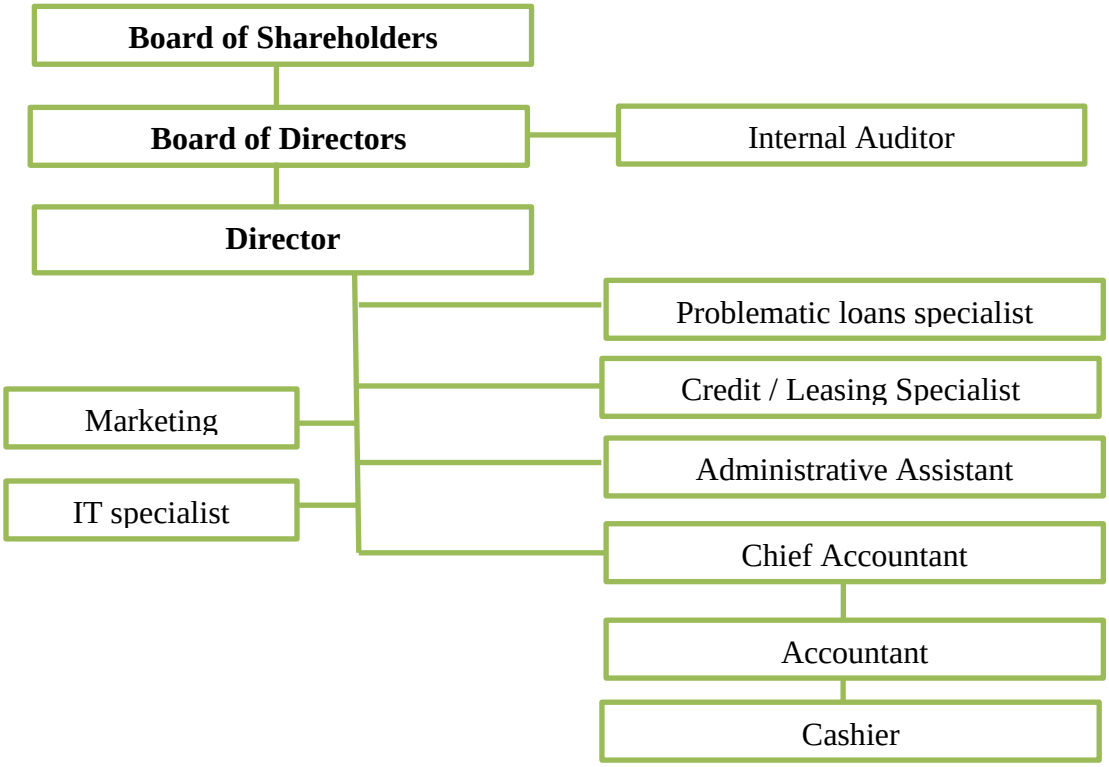
Figure 3. *Agroleasing Leasing Credit Company LLC Recommended Organizational Structure*



Analyzing the existing version of the organizational structure, we made an attempt to develop a more simplified and effective organizational structure, which solves a number of problems within the organization, starting with the possibility of promotion, balancing positions, removing inactive positions, and increasing the efficiency of existing positions.

Based on the literature review, the most important factor is that it is vital to include the behavior of all members of the team, not only the formal leader. Moreover, in a positive role, servant leaders stimulate employees' personal change in efforts to imitate the desired qualifications and attitudes of the leader.

In order to implement servant culture, the director needs to perform servant behavior to his employees and understand their own interests and preferences. Then it is suggested to create a plan of coaching on how to achieve their goals and better satisfy their needs.

As a supportive feature, team-building events can support the creation and development of servant culture, as the team will have the opportunity to communicate outside of the office and establish more friendly relations.

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b. Recommendations on organizational culture

Nowadays, many approaches and views on the development of better organizational culture, but no best solution has been found. Every research identifies one direction and approach and presents its importance of it, and each of it is unique and important for that exact company. In addition, the most optimal corporate culture models may differ in different countries and in different organizations. So, the best organizational culture will be typical for the exact company, and it can't be duplicated as resources – employees and leaders differ, and they create their relations on diverse values.

Lee *et al.* (2004) research has identified a high level of correlation between customer satisfaction and strict department culture. According to this practice, a test was made in Agroleasing.

At the same time, it should be noted that there is a strong connection between corporate culture and productivity levels. In this context, companies with a strong mission, a high degree of employee engagement, and an effective internal control mechanism are the most effective (Denison, D. R. & Mishra; A. K., 1995). According to Liden (2014) and Dinh (2014), an environment where participants share an understanding of putting the needs of others above their own and helping them is characterized as a servant culture. Later, other researchers sought additional evidence for this approach and began to pay more attention to the relationship between several factors, such as effectiveness, hierarchical structure, job satisfaction, productivity, and organizational citizenship (Mousavi *et al*., 2015).

In contrast to researchers who prove a strong link between culture and organizational productivity, there are other theorists who support another hypothesis, which refers to a lower link between culture and performance (Heskett, J. L., & Kotter, J. P., 1992). Their studies, conducted in different countries around the world, show that organizational culture affects short-term productivity. There were organizations with good culture and poor performance and vice versa, 22 organizations with weak culture and excellent productivity were found. This result showed that there are different companies with different cultures that have good results due to business characteristics.

Another characteristic of a company's culture is the difference between the cultures of countries, based on which there can be different forms of effective organizational cultures. For example, Slovenia is characterized by well-formed and organized trade unions, strong workers' associations, and strong works councils, while Estonia, for example, uses much weaker trade union structures and workers' associations and narrow works councils (Psychogios. *et al.*, 2010). Consequently, the effective corporate culture models of organizations operating in those two countries may differ for objective reasons.

There are different approaches to the best organizational structure and culture. Several researchers consider decentralization and free decision-making to be more effective, while others cite real facts about strict cultural politics and centralization, as well as formality and informality within organizations.

Based on the literature review presented in the previous section, it can be concluded that organizational structure and culture have an influence on the output of the company. The processes of influence are presented below in Figure 4 (Hogan *et al.*, 2014):

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Figure 4. *Organizational structure and culture impact on productivity*

In Agroleasing organizational structure, there are several positions that are not functioning in reality. The duties are divided among the staff because of which employees are overloaded, prone to have work-life balance difficulties, and tend to be occupationally stressed. Whole, summarizing the problems with organizational structure and culture, the director of Agroleasing organized two series of tests in correlation with best practices in order to examine the current situation and to develop an improvement plan for structure and culture.

As per Lee *et al.* (2004), there is a high correlation between customer satisfaction and a strong credit department culture in their research. Based on the above statement, as well as taking into account that the main result in MFIs is created from the lending process, we conducted a scientific experiment in Agroleasing to find out the impact of the strict lending procedure on work efficiency. The results of the hypothesis test are presented below.

The first experiment was made in March 2022, while the executive director of the organization proposed to strictly observe the lending policy during the month, without any exceptions, to demand the implementation of all processes according to the sequence and proper provision of documents. During the following month, 151 people visited the company to obtain a new loan, of which 66 people filled out a loan application, and 24 clients received a loan. After each experiment, interviews were taken with the employees of the MFI to compare the results obtained.

The following month, in April, we suggested working without strict adherence to policy requirements, providing flexibility, and engaging customers in their own ways. Out of 126 people who visited Agroleasing, 78 people applied for a loan, and 29 received one. In fact, comparing the data from previous periods, we see that in April, fewer people visited the MFI for a loan, but more applications were received, and loans were granted. Let's compare the data with the same data of the previous year and take into account that the volume of lending increased by 10% on average compared to the previous year. We will see that in March 2021, 38 clients were financed with a volume of USD 389,400, in April - 47 clients with a total of USD 299,800.

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Table 2. *Customer flow and service data during the experimental test period*

Date	Number of visitors	Number of applications	Number of disbursed loans	The volume of disbursed loans
February 2022	132	76	29	305.000 USD
March 2022	151	66	24	214.000 USD
April 2022	126	78	29	283.000 USD

Having 6 months' data (Sep 2021 to Feb 2022) of those who visited Agroleasing for lending, it's obvious, that 58.3% of visitors ended up filling out the application form. For the same period, 38% of applications were approved, and customers received the loan. Comparing the obtained data with the data of the months of implementation of the experiment, we see that there is a significant deviation between the application of a strict culture and the completion of applications, 43.7% compared to the average data of 58.3%, but there is no significant deviation in the number of applications and the index of loans provided (36.3 % compared to the average data of 38%).

Table 3. *Extracted data from experimental test results*

Date	01.02.22 – 28.02.22	01.03.22 – 31.03.22	01.04.22 – 30.04.22
Proposed change	Keep unchanged	Tighten the lending process	Streamline the lending process
Accepting of application forms	Accepting of a standard quantity of applications	Accepting a significantly lower number of applications	Accepting more applications
Lending	Standard lending volume	The slight decrease in lending volume	A non-significant increase in lending volume

In fact, the results obtained showed that the volume of served customers decreased as a result of strict policy adherence. Credit specialists were also not satisfied with the strict procedure, which was also the cause of customer dissatisfaction. The results showed that strict rules and perfect credit policies solely are not enough to have a healthy culture in an organization.

4. Conclusions

This study seeks to determine the relationship between organizational structure, corporate culture, and performance of an MFI and find out an optimal model of structure and culture for an MFI operating in Armenia. The results of the research show that there is no optimal structure or culture model which can be fitted for all sorts of MFIs in different countries. Summarizing the studies and analyses carried out in work, taking into account the features of the organizational structure and corporate culture adopted by the

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examined MFI, it is recommended that the management of MFIs operating in Armenia contribute to the development and formation of a strong corporate culture, which will make both management team and employees to work towards a common goal.

Considering that the examined organization has a small team and extant literature on the subject, we argue that it would be more appropriate to introduce the servant leadership method in Agroleasing. Although servant leadership is accepted in some circles as a Christian paradigm, it has been influenced by many cultures and organizations around the world (Gandolfi *et al.*, 2017). Whereas many, if not most, leadership styles focus first on the mission and then on empowering followers to achieve that mission, the servant leadership model focuses its attention first on the ability of individuals to succeed and then on the success of the mission. This is at odds with most contemporary schools of thought in management and leadership but confirms the potential for excellent results in small professional teams (Gandolfi F., Stone S., 2018). As a positive experience, servant leaders promote the personal development of employees by striving to achieve desirable leadership qualities. In order to implement the servant leadership model, the director must show servant behavior towards his employees, understand their own interests and preferences, and identify the hidden talents of its employees.

It is also recommended to create a coaching plan, and guide employees on how to achieve their goals and better meet their needs. Coaching can complement the servant leadership method and enable employees to easily discover their potential and the way to achieve their goals.

As a feature of the proposed leadership model and coaching, team building can support the creation and development of a planned culture, as the team will have the opportunity to communicate outside the office and establish informal relationships as well.

Pertaining to practice and results of experience gained in Agroleasing, we demonstrate that culture management could be a significant game changer in performance management.

What concerns the organizational structure of an MFI, we hold an opinion that well designed and simple organizational structure has a direct link to the performance of an MFI and creates a competitive advantage for the organization.

Going forward, future research can be based on a cross-nation study of the factors leading to or hindering the achievement of better productivity within the implementation of better corporate culture and simple structure of the MFI. Future studies may also look into socio-cultural factors impacting the sustenance of MFIs in different nations.

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Manuscript received: 26.08.2022

Manuscript received in revised form: 23.10.2022

Manuscript accepted: 24.10. 2022

ISSN: 2247 - 6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2 / 2022), pp. 121 -139
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

The Asymmetric Effects of the Determinants of Real Exchange Rate in Jordan: The Role of Price Index Selection

Dalia Ibrahim Mustafa [1+] and Ghazi Ibrahim Al-Assaf[2]

[1] Assistant Professor, Department of Islamic Banks, Sharia (Islamic Studies) School, The University of Jordan, Amman, Jordan.

[2] Associate Professor, Business Economics Department, Business School, The University of Jordan, Amman, Jordan & Joaan Bin Jassim Academy for Defence Studies, Doha, Qatar.

Abstract: *This study examines the asymmetric dynamics of real exchange rate (RER) determinants in the short- and long-run, which investigates whether the asymmetry exists in the behavior of real exchange rate (RER) determinants in Jordan. It also investigates the effect of the choice of price index used in RER measurement on the cointegrating relationship between RER and its determinants. Workers' remittances (REM), foreign reserves (RES), government expenditures (EXP) and terms of trade (TOT) were chosen as determinants of the RER, which was measured with four different price indices; ($CPI_{U.S}/CPI_{JOR}$, GDP Def. $r_{U.S}/$GDP Def.$_{JOR}$, $IPI_{U.S}/$GDP Def. $_{JOR}$, $PPI_{U.S}/$GDP Def. $_{JOR}$). Quarterly data were applied from Jordan for the period of (2004-2017) using nonlinear autoregressive distributed lag (NARDL) model. The results indicate that the choice of the price index affect significantly the symmetry/asymmetry patterns of the RER determinants, thus, the choice of the price index should be directly linked to the purpose of the study to gain accurate results. Moreover, expansive fiscal policy may increase TOT by causing a country's currency to depreciate. However, TOT was the only determinant that resulted in symmetrical behavior regardless of the price index chosen as a basis for measuring a currency's RER. Contrary to the study's hypothesis, fluctuations in Jordanian imports and exports do not fluctuate with RER. With respect to the short-run symmetry, foreign reserves (RES), governmental expenditures (EXP) and TOT may influence RER asymmetrically leading to possibility to peg RER in the short-run. The expansionary economic policy may have a greater impact on RER than the contractionary policy, which may in turn increase TOT. Hence, overvaluation of RER may hamper economic growth. This may be particularly true for emerging [or emerging-market] economies, such as Jordan's, which are overseen by weak institutions and plagued by market failure.*

Keywords: nonlinear autoregressive distributed lag (NARDL), workers' remittances, foreign reserves, governmental expenditures, terms of trade (TOT).

JEL Codes: C32, E31, F31

1. Introduction

In an open economy, the real exchange rate (RER) is a vital factor in international trade and plays a crucial role in the adjustment process. Because RER volatility reflects economic cycles internationally, it is necessary to capture the forces behind RER fluctuations. Several studies focusing on short-run movements in the RER treat these movements as temporary fluctuations that ultimately yield to long-run equilibrium for which changes in purchasing power parity (PPP) provide sufficient explanation.

Other studies including (Mpofu, 2021) and (Mustafa, 2019), have aimed to find out what factors affected RER, especially in the developing countries, and also they sought to quantify their effects on RER, in

[1] **Corresponding author:** *Email*: Dalia.mustafa@ju.edu.jo **,** (962-6)5355000 ext: 24036, Fax: (962-6)5300231, Amman 11942 Jordan. *The second author Email*: g.alassaf@ju.edu.jo.

ISSN: 2247 - 6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2 / 2022), pp. 121 -139
URL: http://www.reaser.eu
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order to clarify the factors that affect international trade and competitiveness. The determinants tested in these studies include workers' remittances (*Rem*), foreign reserves, government expenditures, and TOT.

Over the past decade, researchers have investigated the nonlinearity and asymmetry of numerous economic relationships, in an effort to more coherently model governments' decision-making processes. To the authors' knowledge, however, few studies have satisfactorily answered whether or not the cointegrating relationship between the RER and its determinants is nonlinear and asymmetric.

The high volume of literature on the RER reveals that interpretations of the RER are highly variable, in part because a study's choice of measurement has a significant effect on the resultant rate. Types of indices used include the Consumer Price Index (CPI), among the most widely used because of its availability and the global availability of the basket of goods on which it is based; the Producer Price Index (PPI); the Gross Domestic Product (GDP) Deflator, which facilitates comparisons of real economic activity levels over time; and the Import Price Index (IPI), which focuses on imported goods and prices within specific industries, making it particularly useful for studying developing countries.

This paper investigates whether asymmetry exists in the behavior of RER determinants in Jordan, as well as to provide empirical clarity regarding the choice of price index used to measure RERs on the cointegrating relationship between the RER and its determinants. The main purpose of this study is to distinguish whether the potential asymmetric behavior in the main determinants of RER affect the empirical results based on the price index selection and, hence to investigate whether series adjust asymmetrically towards its long-run equilibrium value.

2. Literature Review

Analysis and accurate investigation of RER fluctuations is essential to an open economy. In the literature, excellent efforts were provided in attempt to determine the fundamentals of RER and their ability to shoot in the long run. Among those determinants were Workers' remittances, foreign currency reserves, government expenditures and TOT.

Workers' remittances area is a major source of foreign currencies for developing countries. From 2004 to 2017, the period covered by this study, remittances grew more than 200%, from roughly USD160 billion in 2004 to roughly USD 483 billion [i] in 2018 (World Bank, 2019). Even in 2004, the amount of money sent to developing countries as remittances was nearly triple the total amount of foreign aid distributed worldwide (Ratha, 2004). In Jordan, the ratio of workers' remittances to real GDP ranged from 22-30%, underscoring the importance of remittances to the country's economic development. Workers' remittances tackle some critical issues regarding RER (Amuedo-Dorantes and Pozo, 2004); (Lartey et al., 2012).

Capturing the effect of foreign currency reserves on exchange rates is particularly crucial in the Jordanian case because of those reserves' role in pegging exchange rates. Central banks can protect a country's currency from outside attacks by pegging the local currency to the bank's own foreign currency reserves (McKinnon and Schnabl, 2003), thereby allowing a country to maintain competitive export prices. A devalued currency, in contrast, makes exports less profitable and imports more expensive, decreasing TOT—and therefore the citizenry's standard of living. In addition, foreign currency reserves increase a country's capacity for trade. Therefore, previous studies have directed their attention to institutional arrangements, rather than the method of exchange rate measurement (Terada-Hagiwara, 2004).

Several studies indicate that an increase in government expenditures may spur domestic consumption, which may in turn devalue local currency by creating a trade imbalance (Aaron et al., 1997; Ajao and Igbekoyi, 2013; Rasong and Sombatthira, 2021). Abimanyu (1998) analyzed the relationship between the actual RER, the equilibrium RER, and other macroeconomic variables. That paper's estimate showed that an RER is significantly affected by government consumption and the fiscal deficit. Increases in both government consumption and the fiscal deficit appreciate RER. In short, fiscal variables matter when it comes to stabilizing exchange rates (Kuncoro, 2015).

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Review of Applied Socio- Economic Research
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Additional literature analyzes TOT and its effect on exchange rate (Jongbo, 2022; Mustafa, 2019). An increase in TOT indicates either an increase in the price of exports, a decrease in the price of imports, or both. Regardless, TOT may affect the RER significantly, particularly in developing countries (Hinkle and Monteil, 1999) such as Jordan. An RER is sensitive to fluctuations in TOT after crossing specific threshold of commodity currencies (Coudert et al., 2013).

Moreover, which foreign and domestic price indices are chosen directly affects the measurement of RER (Hinkle and Monteil, 1999). A rich prior literature documents this phenomenon and compares the effects of index choice on RER measurement, with the CPI, PPI, GDP Deflator, and IPI among the most-discussed indices. If those indexes moved in parallel, then the resultant RERs would be nearly the same or differ insignificantly on an empirical level (Hinkle and Monteil, 1999).

The first price index used in measuring an RER to start with is CPI; the most common used index in empirical literature (Hinkle and Monteil, 1999); (Chinn, 2000[ii]); (Patel, 2016). The Purchasing Power Parity (PPP) approach concerns itself with consumption price levels more than production cost indices do (Hinkle and Monteil, 1999). As an expenditure price index, CPI captures import prices rather than export prices, and is therefore more sensitive to changes in TOT over time. However, CPI has pitfalls of its own, chiefly it is sensitive to changes in indirect taxes, price controls (Hinkle and Monteil, 1999). The basket of goods and services measured by CPIs differs between countries, as each basket reflects country-specific consumer spending patterns; as a result, RERs derived through measurement of CPI ratios may be less useful for comparing standards of living internationally. (Hinkle and Monteil,1999). RER calculations based on CPI ratios must also take seasonal fluctuations into account (Zanello and Desruelle, 1997); several sources provide seasonally-adjusted CPIs.

GDP Deflator is another frequently-used index (Dornbusch, 1988); (Hinkle and Monteil, 1999); (Ahn et al., 2017; Mahradikka, 2020). GDP Deflator, also called the implicit price deflator because it measures the changes in values of all goods and services produced by an economy, is an alternative rather than a substitute for CPIs: a GDP deflator is a production deflator that includes exports, while a CPI is an expenditure price index that includes imports. These two price indices may behave differently due to changes in TOT (Hinkle and Montiel, 1999). Hinkle and Montiel (1999, p. 144) suggest "using a domestic private consumption deflator instead of the GDP deflator when CPI data is not available."

Since RER is usually measured in order to assess a country's economic competitiveness, it might be more beneficial to use production or cost indices, rather than consumption indices. One of the most common is Wholesale Price Index (WPI) or Producer Price Index (PPI)[iii]which heavily weight traded goods, is usually used in industrial studies of imports and exports (Fleissig and Grennes, 1994). WPI supports the PPP hypothesis, and is considered the best measure of tradable goods because the goods in the basket of goods measured by the index are relatively similar across countries (Chinn, 2000).

RER measurements are less reliable when a WPI is used to measure a foreign country's RER and a GDP deflator used for a study's "home" country: WPIs are based on tradable goods while GDP deflators take all goods into account; as a result, the final price ratio is highly sensitive to changes in productivity on both sides and the RER is distorted (Hinkle and Monteil, 1999). Moreover, WPI is unsuitable for measuring RERs in developing countries owing to its heavy reliance on primary commodities (Hinkle and Monteil, 1999). More consistent results may be obtained through the use of homogeneous price indices (e.g., foreign and domestic CPIs). Nonetheless, some scholars stated that WPI of trading partners and domestic GDP deflator ratio is more favorable in presenting the theoretical notion of RER than using CPIs (Athukorala and Rajapatirana, 2003; Mahraddika, 2020), especially that CPI is subject to manipulation since it is politically observable (Mahraddika, 2020).

Economic theory usually concerns itself with defining the determinants of RER, rather than specifying the functional form of the relationship between RER and its determinants. As a result, most of the literature assumes a linear relationship between RER and its determinants which may not be born out by empirical evidence (Katrakilidis and Trachanas, 2012). This study, guided by the model of Shin, Yu and Greenwood-Nimmo (2014; henceforth, "Shin et al."), revisits the cointegration between RER and its determinants using a NARDL model to investigate the symmetry/asymmetry of those determinants in the long- and short-run. This

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study further adds to the literature by investigating the possibility of inefficiency using a linear cointegration test of ARDL and switching to NARDL to quantify the degree of symmetry between the chosen determinants, and through measuring the effect of price index choice on the aforementioned cointegrating relationship between RER and its determinants.

The remainder of this paper presents the following sections: Section 3 presents the study's principal methodology and econometric model. Section 4 shows and discusses the empirical results of the study, and Section 5 presents concluding remarks and suggestions for further research.

3. Research Elaboration

This study uses quarterly data from 2004 to 2017; the data were collected from the Central Bank of Jordan and Federal Reserve Economic Data (FRED) database. Firstly, to calculate (RER), Purchasing Power Parity (PPP) is used as follows.

$$RER = NER * (\frac{US_P}{J_P}) \quad \ldots\ldots\ldots\ldots (1)$$

Where, NER is the nominal exchange rate and P is the price index. This paper uses the following four price indices:

1) $CPI_{U.S}/CPI_{JOR}$,
2) $GDP\ Deflator_{U.S}/GDP\ Deflator_{JOR}$,
3) $IPI_{U.S}/GDP\ Deflator_{JOR}$,
4) $PPI_{U.S}/GDP\ Deflator_{JOR}$.

Therefore, RER is measured in this paper as follows:

$$RER = ln\left(\frac{rer_t}{rer_{t-1}}\right) \quad \ldots\ldots\ldots\ldots\ldots (2)$$

Two types of price index, CPIs and GDP Deflators, are used as the basis for RER measurement for both home and foreign countries. Some empirical studies used GDP Deflator instead of CPI as a result of certain n data being more available than others. However, CPI and GDP Deflator index may behave differently in response to changes in TOT (Hinkle and Montiel, 1999).

Due to the limitation of the data in Jordan, the analysis has been limited to the following four determinants which represent among the most important variables that play a crucial role in determining RER. Those determinants are; workers' remittances (*Rem*), foreign reserves (*Res*), governmental expenditures (*Gexp*) and terms of Trade (*TOT*). Each of the chosen determinants (*X*) was converted to natural logarithm:

$$X = ln\left(\frac{x_t}{x_{t-1}}\right) \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The NARDL model suggested by Shin et al. (2014: p.8) is applied in order to investigate the effect of positive and negative shocks on the determinants:

$$X_t = X_0 + X_t^- + X_t^+ \quad \ldots\ldots\ldots\ldots\ldots (4)$$

Where;

$$X_t^- = \sum_{j=1}^{t} \Delta X_j^- = \sum_{j=1}^{t} Min(\Delta X_j, 0) \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

$$X_t^+ = \sum_{j=1}^{t} \Delta X_j^+ = \sum_{j=1}^{t} Max(\Delta X_j, 0) \quad \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

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The equations (5) and (6) are the partial sums of negative and positive changes in the determinants respectively. Decomposing each determinant according equation (4), as applied by Fedoseeva (2016), we subsequently obtain the long-run equation of RER.

$$RER_t = c + \beta_1 REM_t^- + \beta_2 REM_t^+ + \beta_3 RES_t^- + \beta_4 RES_t^+ + \beta_5 EXP_t^- + \beta_6 EXP_t^+ + \beta_7 TOT_t^- + \beta_7 TOT_t^+ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

With $c = \alpha + RER_0$.

In order to examine the dynamic model, the NARDL model of Shin et al. (2014) is applied as follows:

$$\Delta RER_t = a_0 + a_1(RER_{t-1} - a_2 REM_{t-1}^- - a_3 REM_{t-1}^+ - a_4 RES_{t-1}^- - a_5 RES_{t-1}^+ - a_6 EXP_{t-1}^- - a_7 EXP_{t-1}^+ - a_8 TOT_{t-1}^- - a_9 TOT_{t-1}^+) + \sum_{\tau=0} \mu_\tau \Delta REM_{t-\tau}^- + \sum_{\tau=0} \pi_\tau \Delta REM_{t-\tau}^+ + \sum_{\tau=0} \rho_\tau \Delta RES_{t-\tau}^- + \sum_{\tau=0} \sigma_\tau \Delta RES_{t-\tau}^+ + \sum_{\tau=0} \theta_\tau \Delta EXP_{t-\tau}^- + \sum_{\tau=0} \gamma_\tau \Delta EXP_{t-\tau}^+ + \sum_{\tau=0} \delta_\tau \Delta TOT_{t-\tau}^- + \sum_{\tau=0} \varphi_\tau \Delta TOT_{t-\tau}^+ + \sum_{\omega=0} \vartheta_\omega \Delta RER_{t-\omega} + u_t \ldots\ldots\ldots (8)$$

The equation is estimated by means of a stepwise regression after selecting the number of lags according to the Akaike Information Criterion (AIC) using EViews 10. Thus, equation (8) is assessed as follows:

$$\Delta RER_t = a_0 + a_1 RER_{t-1} - b_2 REM_{t-1}^- - b_3 REM_{t-1}^+ - b_4 RES_{t-1}^- - b_5 RES_{t-1}^+ - b_6 EXP_{t-1}^- - b_7 EXP_{t-1}^+ - b_8 TOT_{t-1}^- - b_9 TOT_{t-1}^+ + \sum_{\tau=0} \mu_\tau \Delta REM_{t-\tau}^- + \sum_{\tau=0} \pi_\tau \Delta REM_{t-\tau}^+ + \sum_{\tau=0} \rho_\tau \Delta RES_{t-\tau}^- + \sum_{\tau=0} \sigma_\tau \Delta RES_{t-\tau}^+ + \sum_{\tau=0} \theta_\tau \Delta EXP_{t-\tau}^- + \sum_{\tau=0} \gamma_\tau \Delta EXP_{t-\tau}^+ + \sum_{\tau=0} \delta_\tau \Delta TOT_{t-\tau}^- + \sum_{\tau=0} \varphi_\tau \Delta TOT_{t-\tau}^+ + \sum_{\omega=0} \vartheta_\omega \Delta RER_{t-\omega} + u_t \ldots\ldots\ldots (9)$$

Note that b_2 and b_3 consist of elasticity and speed of adjustment. Thus, the following formula should be used to test elasticity:

For *Rem*: $a_2 = -\frac{b_2}{a_1}$ and $a_3 = -\frac{b_3}{a_1}$

For *Res*: $a_4 = -\frac{b_4}{a_1}$ and $a_5 = -\frac{b_5}{a_1}$

For *Gexp*: $a_6 = -\frac{b_6}{a_1}$ and $a_7 = -\frac{b_7}{a_1}$

For *TOT* : $a_8 = -\frac{b_8}{a_1}$ and $a_9 = -\frac{b_9}{a_1}$

Three types of asymmetries were tested which are; elasticities of the determinants, reaction (long-run) asymmetry and the impact (short-run) asymmetry. The key hypothesis of the current research is based on the fact that the choice of price selection index plays a significant role in the symmetry/asymmetry patterns of the determinants of RER for Jordan.

4. The Empirical Results and Discussions

Descriptive statistics, correlation matrix and unit root tests are implemented and presented in tables (1-3), respectively; table (1) provides descriptive analyses of the studied variables. Mean and median for most of the variables are within a narrow range, as is further supported by the standard deviation values. As a measure of symmetry in observations distribution, the degree of skewedness indicates that RER *$IPI_{U.S}$/GDP Def.* $_{JOR}$, RER *$PPI_{U.S}$/GDP Def.* $_{JOR}$, Res and TOT are moderately skewed in their observations. Meanwhile, RER *GDP Def.*$_{U.S}$*/GDP Def.*$_{JOR}$,RER *$IPI_{U.S}$/GDP Def.* $_{JOR}$, Rem, and Gexp are approximately symmetric. While kurtosis showed that the dataset of Res, Gexp and TOT apparently have heavier tails than a normal distribution bell curve.

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Table 1. Descriptive diagnostics

Descriptive	**RER**				**RER Determinants**			
	$CPI_{U.S}/CPI_{JOR}$	GDP Def. $r_{U.S}$/GDP $Def._{JOR}$	$IPI_{U.S}$/GDP $Def._{JOR}$	$PPI_{U.S}$/GDP $Def._{JOR}$	**Rem**	**Res**	**Gexp**	**TOT**
Mean	0.725	0.017	2.632	3.873	0.010	0.018	0.023	-0.003
Median	0.702	0.028	2.776	4.082	0.005	0.017	0.060	-0.017
Maximum	0.847	0.106	3.463	5.161	0.156	0.241	0.628	0.259
Minimum	0.653	-0.089	1.428	2.061	-0.200	-0.329	-0.646	-0.203
Std. Dev.	0.065	0.067	0.565	0.890	0.085	0.098	0.265	0.093
Skewness	0.707	-0.170	-0.608	-0.501	-0.240	-0.755	-0.393	0.609
Kurtosis	1.993	1.389	2.172	2.050	2.618	5.049	3.107	3.954
Observations	55	55	55	55	55	55	55	55

Source of Data: The Central Bank of Jordan and Federal Reserve Economic Data (FRED) database

The Analysis: authors' computation via EViews.

Table (2) presents the correlation between the variables of the study. The high positive correlation between RER$CPI_{U.S}/CPI_{JOR}$ and RER$PPI_{U.S}/GDP\ Deflator_{JOR}$ is justified. PPI provides a primary indicator for CPI; increases in production costs are passed on to retailers and, in turn, to consumers, resulting in an elevated CPI. RER$PPI_{U.S}/GDP\ Deflator_{JOR}$ and RER $IPI_{U.S}/GDP\ Def._{JOR}$ are almost perfectly correlated, while RER $PPI_{U.S}/GDP\ Deflator_{JOR}$ and RER $CPI_{U.S}/CPI_{JOR}$ are almost negatively perfectly correlated. It might be misleading to attempt interpreting those findings since the composition of each of the price index is different. Furthermore, those price indexes are comparing two different countries: a highly developed country (USA) with developing emerging country (Jordan). Notably, the correlation between determinants of the RER and all measured RERs is weak—with a value of around zero.

Table 2. Correlation Matrix

		RER				**RER Determinants**			
		GDP Deflator $_{U.S}$***/GDP Deflator*** $_{JOR}$	***CPI*** $_{U.S}$***/CPI*** $_{JOR}$	***IPI*** $_{U.S}$***/GDP Deflator*** $_{JOR}$	***PPI*** $_{U.S}$***/GDP Deflator*** $_{JOR}$	**Rem**	**Res**	**Gexp**	**TOT**
RER	***CPI*** $_{U.S}$***/CPI*** $_{JOR}$	**0.149**							
	IPI $_{U.S}$***/GDP Deflator*** $_{JOR}$	**0.034**	**-0.936**						

ISSN: 2247 - 6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2 / 2022), pp. 121 -139
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	$PPI_{US}/GDP\ Deflator_{JOR}$	**0.024**	**-0.952**	**0.988**					
ER Determinants	**Rem**	**0.714**	**0.156**	**-0.048**	**-0.056**				
	Res	**0.101**	**0.023**	**0.01**	**-0.002**	**0.193**			
	Gexp	**0.483**	**0.054**	**0.091**	**0.075**	**0.052**	**0.045**		
	TOT	**-0.016**	**0.006**	**0.036**	**0.019**	**-0.131**	**-0.071**	**0.095**	**1**

Source of Data: The Central Bank of Jordan and Federal Reserve Economic Data (FRED) database

The Analysis: authors' computation via EViews.

Before conducting a NARDL test, unit root tests have been applied (as shown in table (3)) to ensure that none of the series of data are integrated at I(2). Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were conducted to test the unit root of the variables. As shown in table (3), all the variables are stationary at level or first difference, indicating that the necessary conditions for the application of a NARDL model have been fulfilled.

In table (4), the bound test provided stark evidence, irrespective of the choice of price index, of a cointegrating relationship between the RER and its determinants; this result supports that of previous studies that focus on developing countries (Mustafa, 2019).

The results of the long-run dynamics are presented in table (4), *Rem* dynamics were sensitive to a statistically significant degree when RER was based on CPI and GDP Deflator price ratios, with higher sensitivity to an increase in *Rem*. Estimated long-run coefficients of *Rem* were -0.145, 0.496 on RER based on CPI and GDP Deflator price ratios respectively. There are multiple possible reasons for the different sign and magnitude of the coefficients. Because CPIs are expenditures price indices, CPI-based comparisons between Jordan and the US may be misleading due to differences in the composition of the commodities basket used to calculate CPI in each country. Also, CPIs namely focus on non-tradable commodities. Moreover, the differences may be the result of divergences in RER measurement derived from a change in TOT (Hinkle and Montiel, 1999).

A country's currency tends to increase (and therefore its competitiveness tends to decrease) with an increase in remittance inflow from emigrant workers. Increased consumption deriving from an increase in household income may be apparent in local CPIs. As a result, the sign of *Rem* coefficients (for both increased and decreased remittances) was negative. Conversely, an increase in remittances may lead to a decrease in exports in favor of an increase in imports. Hence, the remittances impose a penalty on export producers; this increased economic cost matches the Dutch disease, which clarified the effect of currency appreciation on shifting from tradable goods to nontradable ones (Hinkle and Montiel, 1999); (Amuedo-Dorantes and Pozo, 2004); (Hassan and Holmes, 2013). *GDPJor* may tend to decline with a loss of export production, which leads to RER appreciation (i.e., a decrease in the value of the Jordanian dinar). This appreciation explains the positive sign of the *Rem* coefficients[iv]. Therefore, the government must enact rigorous regulations to ensure that workers' remittances are received through formal channels. In doing so, it can control the effect of remittances on the local economy.

The long-run coefficients of *Gexp* (positive and negative) are statistically significant (at 5 percent) when an RER is measured based on GDP Deflator or CPI. *Gexp* coefficients had higher values when RER was measured according to the GDP Deflator ratio. This result is a matter of controversy in the literature. Some studies have argued that an increase in government expenditures eventually causes the local currency to appreciate,[v] while other studies argue that increased expenditures, by lowering savings rates, ultimately have the opposite effect and increase the RER[vi].Much therefore depends on whether Ricardian equivalence is

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observed.[vii]The empirical results of Gexp with RER measured by CPI are consistent with (Kuncoro, 2015), while those of Gexp with RER measured by GDP Deflator is consistent with (Chowdhury, 2012).

Two out of four RER measures showed statistical significance for both positive and negative long-run TOT coefficients. An increase in exports—and therefore in TOT—may raise wages in export-oriented industries, thereby increasing consumption and raising the RER. In such a case, the opposite (i.e., decreased exports ultimately lowering an RER) would also be true (Mustafa, 2019).

Table (5) represents the cornerstone of this study. It reports the long-run elasticities of both types of partial sum of each determinant. The results show the workers' remittances is positively correlated with RER regardless of the choice of price index; if workers' remittance drop by 1% then the RER decreases by7 - 22 %;a 1% increase in remittances raises the RER by 7 - 39%. Overvaluation of RERs may have a deleterious impact on economic growth, especially for emerging economies such as Jordan, due to those economies' weak institutions and propensity for market failure; these foibles underscore workers' remittances as a factor in an RER (Daway-Ducanes, 2019).

Similarly government expenditures have positive effect on RER appreciation and depreciation regardless of the price index chosen as a basis for measurement. However, RERs measured based on $PPI_{U.S}/GDP\ Deflator_{JOR}$ demonstrate comparatively higher sensitivity. One positive shock in government expenditures increases an RER 8 to 25%, while a 1% decrease in government expenditures lowers an RER by 7 to 25%. The researches declared the effect of increasing governmental expenditures differ between developing countries and developed ones (Kuncoro, 2015).Several studies indicate that cyclical changes in government expenditures may encourage private consumption (Linnemann, 2006),which may push demand upward and depreciate local currencies through the creation of a trade imbalance (Aaron et al., 1997; Ajao and Igbekoyi, 2013). Government expenditures therefore merit careful attention, given that they may be considered a proxy for fiscal policy.

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Table 3. Unit Root Results for the Studied Variables

UNIT ROOT TEST TABLE (PP)

	RER				**RER determinants**			
At Level	***GDP Deflator$_{U.S}$/GDP Deflator$_{JOR}$***	***CPI$_{U.S}$/CPI$_{JOR}$***	***IPI$_{U.S}$/GDP Deflator $_{JOR}$***	***PPI$_{U.S}$/GDP Deflator $_{JOR}$***	**Rem**	**Res**	**Gexp**	**TOT**
With Constant	-12.067***	-1.618	-2.298	-1.971	-8.979***	-6.267***	-33.719***	-6.425***
With Constant & Trend	-18.321***	-0.726	-2.513	-3.758**	-11.28***	-6.289***	-42.839***	-6.404***
Without Constant & Trend	-7.415***	-2.704***	1.357	1.794	-8.381***	-6.114***	-20.256***	-6.487***
At First Difference	**d(*GDP Deflator$_{U.S}$/GDP Deflator$_{JOR}$*)**	**d(*CPI$_{U.S}$/CPI$_{JOR}$*)**	**d(*IPI$_{U.S}$/GDP Deflator $_{JOR}$*)**	**d(*PPI$_{U.S}$/GDP Deflator $_{JOR}$*)**	**d(Rem)**	**d(Res)**	**d(Gexp)**	**d(TOT)**
With Constant & Trend	-26.32***	-5.54***	-9.29***	-11.09***	-26.35***	-33.16***	-70.44***	-36.62***
Without Constant & Trend	-26.40***	-5.14***	-7.15***	-7.19***	-26.90***	-35.45***	-71.54***	-36.24***

UNIT ROOT TEST TABLE (ADF)

	RER				**RER determinants**			
At level	***GDP Deflator$_{U.S}$/GDP Deflator$_{JOR}$***	***CPI$_{U.S}$/CPI$_{JOR}$***	***IPI$_{U.S}$/GDP Deflator $_{JOR}$***	***PPI$_{U.S}$/GDP Deflator $_{JOR}$***	**Rem**	**Res**	**Gexp**	**TOT**
With Constant	-1.394	-2.094	-2.288	-2.399	-2.231	-6.267***	-13.344***	-6.431***
With Constant & Trend	-1.365	-0.094	-1.024	-0.647	-2.705	-6.287***	-13.627***	-6.412***
Without Constant & Trend	-1.767*	-1.444	1.438	1.827	-2.034**	-6.117***	-2.060**	-6.492***

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At First Difference	d(*GDP Deflator$_{U.S}$/GDP Deflator$_{JOR}$*)	d(*CPI$_{U.S}$/CPI$_{JOR}$*)	d(*IPI$_{U.S}$/GDP Deflator $_{JOR}$*)	d(*PPI$_{U.S}$/GDP Deflator $_{JOR}$*)	d(Rem)	d(Res)	d(Gexp)	d(TOT)
With Constant	-5.391***	-1.898	-3.89***	-3.632***	-6.246***	-6.507***	-9.423***	-5.270***
With Constant & Trend	-5.437***	-5.550***	-3.208*	-3.624**	-6.175***	-6.431***	-9.315***	-5.201***
Without Constant & Trend	-5.206***	-1.451	-3.30***	-2.608**	-9.217***	-6.579***	-9.528***	-5.331***

Notes: the values presented above is t-statistics, (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant

Source of Data: The Central Bank of Jordan and Federal Reserve Economic Data (FRED) database

The Analysis: authors' computation via EViews.

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TOT is among the variables that effect RERs; the theoretical literature indicated that an improvement in TOT may deteriorate an RER (i.e., appreciate local currency). An improvement in TOT indicates a shift in a country's labor force from nontraded goods toward traded goods sectors, and this shift explains the signs of the TOT coefficients under different RER measurements. RERs based on IPI/GDP Deflator were negative because IPI is the denominator of TOT.

Table 4. NARDL Outcomes

The Price level index used	$CPI_{U.S}/CPI_{JOR}$	$GDP\ Deflator_{U.S}/GDP\ Deflator_{JOR}$	$IPI_{U.S}/GDP\ Deflator_{JOR}$	$PPI_{U.S}/GDP\ Deflator_{JOR}$
Const	-0.046***	0.149***	0.134	0.161*
RER_{t-1}	-2.188***	-3.570***	-0.969	-1.544*
Rem^{+}_{t-1}	-0.145***	0.496***	0.380	0.134
Rem^{-}_{t-1}	-0.183***	0.361***	0.213	0.102**
Res^{+}_{t-1}	0.035**	0.081*	-0.075	-0.157
Res^{-}_{t-1}	0.023	0.003	-0.063	0.055
$Gexp^{+}_{t-1}$	-0.183***	0.292***	0.238	0.377
$Gexp^{-}_{t-1}$	-0.163***	0.340***	0.244	0.345
TOT^{+}_{t-1}	0.099***	0.088**	-0.548	-0.346
TOT^{-}_{t-1}	0.057***	0.143***	-0.371	-0.371
$\Delta Rem+$		0.148***	0.237**	0.161
$\Delta Rem-$			0.312**	
$\Delta\ Res+$	-0.063**	0.050		
$\Delta\ Res-$	0.039*			0.196***
$\Delta Gexp+$	-0.031***	0.037**	0.203**	0.055*
$\Delta Gexp-$	-0.026**	0.088**		0.117**
$\Delta\ TOT+$			0.079**	
$\Delta\ TOT-$		0.102***		
$\Delta\ RER_{t-1}$	1.171***	1.619***		0.254**
$\Delta\ RER_{t-2}$	1.058***	0.683***	-0.396***	
$\Delta\ RER_{t-3}$	1.099***		-0.407***	-0.340***
$\Delta\ RER_{t-4}$	0.581***			0.167*
$\Delta\ RER_{t-5}$	0.487***			
ΔRem^{+}_{t-1}	0.047	-0.130**		

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$\Delta\ Rem^{-}_{t-1}$		-0.150**		
$\Delta Res +_{t-1}$		-0.091**		0.201***
$\Delta Res -_{t-1}$	0.047**			
$\Delta Res +_{t-2}$				0.091
$\Delta Res -_{t-2}$		-0.123**		
$\Delta Gexp +_{t-1}$		-0.131**	-0.067	-0.072*
$\Delta Gexp -_{t-1}$		-0.200***		-0.259***
$\Delta Gexp +_{t-2}$	0.081***	-0.058**		-0.151***
$\Delta Gexp -_{t-2}$	0.062***	-0.066***		
$\Delta TOT +_{t-1}$	-0.085**		0.532***	0.303***
$\Delta TOT -_{t-1}$		-0.062**	0.240***	0.207***
$\Delta TOT +_{t-2}$	-0.063**		0.240**	0.166**
$\Delta TOT -_{t-2}$	0.054***	-0.045	0.150**	0.112*
R^2	0.933	0.994	0.972	0.986
Adj. R^2	0.846	0.988	0.953	0.972
LM-Corr	0.1426	0.5747	0.240	0.890
Hetero.	0.4446	0.2656	0.498	0.487
Normality	0.592	0.684	0.871	0.560
Stability (CUSUM, CUSUM SQ)	Stable in both tests	Stable in both tests	Stable in both tests	Stable in both tests
Cointegration(Bound Test	6.975***	28.586***	5.788***	7.849***

Note: *,**,* represent the significance level at 1%, 5% and 10% respectively.**

Upper and lower bounds (critical values) are reported in (Pesaran et al., 2001) for the case: unrestricted and no trend for k=4

(at 10% sig level: I(0)= 2.45, I(1)= 3.52; at 5% sig. level: I(0)= 2.86, I(1)=4.01).

Source of Data: The Central Bank of Jordan and Federal Reserve Economic Data (FRED) database

The Analysis: authors' computation via EViews.

However, RER based on *GDP Deflator*$_{U.S}$*/GDP Deflator*$_{JOR}$ was odd in its signs compared to the other measured RERs. When TOT changes significantly, movement in CPI (reflecting changes in the prices of imported goods) and GDP Deflator (changes in the prices of exported goods) may differ. Therefore, a fluctuation in TOT may cause RERs to diverge as well as a result of the opposing methodologies (Hinkle and Monteil, 1999).

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Table 5. Long-run Elasticities and Symmetry outcomes

RER

	$CPI_{U.S}/CPI_{JOR}$	$GDP\ Deflator_{U.S}/GDP\ Deflator_{JOR}$	$IPI_{U.S}/GDP\ Deflator_{JOR}$	$PPI_{U.S}/GDP\ Deflator_{JOR}$
Long-run elasticities				
Rem +	0.066	0.139	0.392	0.087
Rem -	0.083	0.101	0.220	0.066
Res +	-0.016	0.023	-0.077	-0.102
Res -	-0.011	0.001	-0.065	0.035
Gexp+	0.083	0.082	0.246	0.244
Gexp-	0.074	0.095	0.252	0.223
TOT+	-0.045	0.025	-0.565	-0.224
TOT-	-0.026	0.040	-0.383	-0.240
Symmetry Testing				
Long-run Symmetry				
Rem	0.097	0.000	0.043	0.639
Res	0.657	0.094	0.886	0.024
Gexp	0.005	0.000	0.748	0.135
TOT	0.126	0.174	0.076	0.765
Short-run Symmetry				
Rem	0.164	0.084	0.638	-
Res	0.003	0.182	-	0.322
Gexp	0.007	0.384	0.174	0.564
TOT	0.001	0.932	0.020	0.280

The values in the tables are the P-value

Source of Data: The Central Bank of Jordan and Federal Reserve Economic Data (FRED) database

The Analysis: authors' computation via EViews.

When TOT improves, GDP Deflator tends to increment more evidently than CPI. Ultimately, the net effect of changes in TOT depends on the change in export and import prices and also on the relative percentage

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of imports and exports within an economy; thus, the net effect of changes in TOT cannot be determined on a general basis. Moreover, the prices in Jordan rise faster than prices in U.S. (Al-Qalawi and Al-Waked, 2017).

Table (5) also presents, through LR-symmetry and SR-symmetry results, respectively, the reaction and impact symmetry/asymmetry; the Wald test was applied separately on each determinant and RER measurement. We begin with RER measured based on CPI ratios. In this instance, only the null hypothesis of government expenditures was rejected in LR-Symmetry; for the other three determinants were aligned with the null hypotheses. While the SR-Symmetry hypothesis regarding *Rem* was accepted, however the other three determinants showed asymmetrical behavior for *Res*, *Gexp* and TOT. However, in testing impact symmetry/asymmetry—also by means of a Wald test—to find out whether there is inequality of the coefficient of first differenced variables, the results disclosed the significance of all determinants except workers' remittances. Workers' remittances constitute a main source of foreign currencies, especially in developing countries. They may be larger than a government's foreign reserves, as the reserves are more. The government must take advantage of this effect by encouraging workers to send remittances solely through formal channels. World Bank (2006) declared that 50% of workers' remittances are received through informal channels. The magnitude of this informal channel may have a deleterious impact on local exchange rates—this is, of course, in addition to the threat informal remittance channels present from a money laundering and terrorist financing perspective (Jongwanich, 2007).

The study's empirical results suggest that upstream and downstream RERs are cointegrated with their main determinants. This cointegration indicates asymmetric adjustment between the RER and overall price levels and verifies the existence of a long-run cointegration relationship between the RER and its determinants, along with the overall price level index with underlying adjustment process being highly asymmetric. Clearly, there is a difference between the values of the asymmetric adjustments, with *Rem* and TOT coefficients for both positive and negative fluctuations. In such a case, it can therefore be concluded that real exchange rate responds asymmetrically to the changes in its macroeconomic determinants and the overall price level index, where the adjustment speed to the new equilibrium at period t is faster when the residual is positive than when is negative.

5. Conclusions

One the crucial topics in international economics is RER and its determinants, however many of the previous studies assumed a linear relationship between RER and its determinants. In 2014 Shin et al. suggested "modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL", and, in doing so, opened the door to extensive empirical review. Building on that work, this paper attempts to investigate the asymmetric dynamics of RER determinants in short- and long-run.

This study also takes the choice of price level index used to measure RER into consideration: because a study's choice of price index may radically be a measurement/observation of an RER, it is not always clear which price index is the most appropriate choice. We recommend that future studies choose their price index based on the purpose of the work undertaken.

The current study specifies four determinants of RER: workers' remittances, foreign reserves, government expenditures, and TOT. RER is measured using four different price level indices: $CPI_{U.S}/CPI_{JOR}$, *GDP Deflator* $_{U.S}$*/GDP Deflator* $_{JOR}$, $IPI_{U.S}$*/GDP Deflator* $_{JOR}$ and *PPI* $_{U.S}$*/GDP Deflator* $_{JOR}$.

The results revealed significant long-run asymmetry of workers' remittances when RER is measured based on GDP (i.e., when *GDP Deflator* $_{U.S}$*/GDP Deflator* $_{JOR}$ is chosen as the price level index). Increased household consumption affects the prices of goods and services, which leads to changes in the Jordanian GDP Deflator. This effect may be enhanced as remittance inflows increase because households that receive

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remittances may also spend more on imports. Hence an asymmetric short-run effect is present when RER is measured based on $IPI_{U.S}/GDP\ Deflator_{JOR}$.

Thus, the asymmetric effect of remittances on RER can be captured when the GDP deflator price index is used. The governments of developing countries should take advantage of this result by encouraging the immigrants to increase the amount of money transfers in foreign currencies to enhance the external development finance. Remittances help to initiate counter-cyclical policies in developing countries, keeping in mind they are altruistic transfers that do not have to be paid back.

Foreign reserves show a long-run asymmetric effect when the RER measured by $PPI_{U.S}/GDP\ Deflator_{JOR}$, and a further short-run asymmetric effect when the RER is measured by $CPI_{U.S}/CPI_{JOR}$. Foreign reserves are directly related to changes in gold prices and political events. When foreign reserves are at acceptable levels domestically, the economy is more likely to stabilize through the reserves' positive effect on base money, which in turn has a positive effect on CPI. It is worth noting that CPI may affect PPI, not the other way around. We therefore recommend that policy makers base monetary policy decisions on RERs measured according to $CPI_{U.S}/CPI_{JOR}$.As increased foreign reserves represent increased wealth, however, the Central Bank should concentrate on maintaining specific levels of foreign reserves, with an eye toward stabilizing the RER.

Government expenditures show long-run asymmetry when an RER is measured based on both $CPI_{U.S}/CPI_{JOR}$ and $GDP\ Deflator_{U.S}/GDP\ Deflator_{JOR}$; asymmetry in the short-run is exhibited with an RER based on $CPI_{U.S}/CPI_{JOR}$.Increases in government expenditures will increase the demand for nontraded commodities. This increase in the demand for nontradeables will raise their prices, leading to an increase in the value of local currency. This phenomenon was among those that Mundell-Fleming illustrated as an effect of fiscal policy on RER (Chowdhury, 2012). However, a country's currency will depreciate if government expenditures tend to be directed toward tradable commodities. As we clarified, the GDP Deflator tends to cover nontradable goods and services more than traded ones, while CPI covers both. Thus, the nature of government expenditures (in particular, the ratio of spending on tradable versus nontradable goods) should be determined in advance of fiscal policy decisions.

Government expenditures showed asymmetric effect in both long- and short-run, suggesting that an expansive fiscal policy may depreciate the local currency, which may in turn increase the ratio of imports to exports—ultimately negatively affecting short-run RERs and appreciating the local currency.

Last but not least, TOT was the only determinant to show along-run symmetrical effect on RERs regardless of the price index used. However, in the short-run, asymmetry was present in RERs measured based on $CPI_{U.S}/CPI_{JOR.}$

Therefore, several corrective reforms can be undertaken to reach an equilibrium state for a country's RER:

1) Supporting trade liberalization, which may increase the ratio of exports to imports.

2) A more fine-grained analysis of government expenditures (both discretionary and nondiscretionary), such that the role of each broad budget category in strengthening or weakening the economy may be determined with greater certainty

3) Facilitating remittance flows through formal, as opposed to informal channels (e.g., by reducing transaction costs), which would confer the additional benefit of combatting money laundering and terrorism financing.

Further research could investigate other determinants of RER, expand the range of countries studied, or lengthen the period covered by the study. A longer time span or more frequently-collected data might better

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confirm this study's findings. Testing the equilibrium of the RER may add further value and be of particular interest for emerging economies.

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End Notes

[i] https://www.worldbank.org/en/news/press-release/2019/04/08/record-high-remittances-sent-globally-in-2018

[ii] Chinn expressed RER in terms of GDP deflators, however he mentioned CPI is the typical price level to be used.

[4] In 1978, United States decided to drop using WPI and it replaced it with PPI which is a similar measure but it's accurately named and calculated (U.S. Bureau Labor Statistics, 2016).

[iv] Refer to (Bussolo et al., 2007) for further detailabout the impact of remittances on RERs.

[v] Blanchard, 2003 as mentioned in Kuncoro, 2015.

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Manuscript received: 18.11.2021

Manuscript received in revised form: 26.09.2022

Manuscript accepted: 28.09.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 140 - 164
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

The Social and Solidarity Economy, a New Solution to Decrease Unemployment in Morocco? Case of Cooperatives in the State of Tangier Tetouan Al-Hoceima.

Reda SAHMI [1+], Mostafa EL HACHLOUFI[2] and Meriem ABOULETHAR[3]

[1] PhD Student at the FSJES AIN SEBAA, Hassan II University – Casablanca
[2] Professor at the FSJES AIN SEBAA, Hassan II University – Casablanca
[2] Professor at the FSJES AIN SEBAA, Hassan II University – Casablanca

Abstract: *In recent years, the Social and Solidarity Economy (SSE) has developed profusely in Morocco. Today, it is considered as a real instrument capable to provide solutions to the various socio-economic problems. In fact, the actors of the SSE, more specifically "the cooperatives", create annually tens of thousands of jobs for the benefit of the most marginalized individuals. The aim of this scientific article is to show how important SSE is to decrease unemployment, and the role that cooperatives play to create job opportunities in the state of Tangier, Tetouan, Al-Hoceima (TTA). The results of this research, based on this study, have allowed us to come up with some strategic orientations that are necessary to create economic and social solutions which will lead to the development of the SSE and the decline of unemployment.*

Keywords: Social and Solidarity Economy, Cooperatives, Labour Economy, Unemployment, Econometrics.

JEL Codes: B23; E11; E12; E13; E24; J01; P13.

1. Introduction

Recently, the Moroccan vision has increasingly focused in the Social and Solidarity Economy (SSE) and its dimensions, which bring together social, economic and environmental objectives in an integrated and balanced way. This allows the actors of the SSE to better understand the socio-economic problems of the populations concerned.

The purpose of this work is to make economic analyses that will enrich our understanding of the SSE and its role in the decreasing of unemployment in the state of Tangier, Tetouan, Al-Hoceima (TTA). The results and recommendations will be useful for the scientific community and researchers in economics to better understand the link between the SSE and unemployment.

Beyond the scientific contribution, the conclusions of this research can also be used locally and nationally by policy makers, who are in charge with the implementation strategies and action plans, as a scientific basis for developing the SSE sector in Morocco. These results could also be useful for the leaders of cooperatives aiming to promote SSE actions.

The problem of unemployment depends on several quantitative and qualitative factors. The growth of job seekers can be explained by population growth, the age pyramid, the number of graduates, the illiteracy rate, etc. In fact, the Moroccan population has increased from 32 million in 2011 to 36 million in 2021, In the same year, the age pyramid shows a predominance of young people, 60% of whom are under 35 years old

[+] **Corresponding Author**: *Email:* redasahmi@yahoo.com

ISSN: 2247-6172
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and 44% are under 25 years old (HCP, 2021). According to projections for 2026, the population is estimated to be around 38 million, with an annual average increase of 347,000 people (HCP, 2021)[1]. The number of graduates continues to grow, from 27,000 in 1999 to 141,558 in 2019 (MNE, 2021)[2]. Certainly, the unemployment rate of graduates increased from 15.7% to 18.5% between 2019 and 2020 (HCP, 2021). Concerning labor demand, unemployment is mainly due to the growth of GDP, the existence of the informal sector[3], the effectiveness of public and private investment, the social security system, the quality workforce, the activity and financial health of companies, the costs of the recruiting process.

In Morocco, the unemployment rate is increasing. Between 2019 and 2020, it rose from 9.2% to 11.9% nationally, from 12.9% to 15.8% in urban areas, and from 3.7% to 5.9% in rural areas (HCP, 2021). Moreover, the growth of the unemployment rate seems paradoxical in Morocco; on the one hand, the Moroccan economy has experienced sustained economic growth for nearly two decades. On the other hand, the economic growth rate has dropped by an annual average of 4.8%[4], between 2000 and 2009, to 3.5% between 2010 and 2019. Low job creation[5] characterizes both decades, especially for youth. At the same time, the average of population growth rate was 1.2%[6] between 2000 and 2019. In the same vein, "the *active population* [7]*is full with more and more young job seekers, thus exerting pressure on the labor market*" (CSMD, 2021). To this end, we can say that the evolution of economic growth in Morocco is much higher than that of demographic growth. This situation indicates that the gap between the growth path and employment dynamics in Morocco is widening, it also reflects the incapacity of the economy to provide jobs. The analysis of the labor market seems necessary to identify the causes of the increase of unemployment rate in the state of Tangier, Tetouan, Al-Hoceima, despite the achievement of sustained economic growth and the efforts of the State to reduce the acuteness of this phenomenon.

Alongside the public and private sectors, is it possible to make the third sector[8], the Social and Solidarity Economy (SSE), a third option that is capable to create more jobs for the active population, in particular youth ? Moreover, the analysis of certain experiences reveals the capacity of the SSE to promote employability, to take up social challenges and to accompany the countries towards the realization of a sustainable, inclusive and human-centered development. Let us cite the example of France where the SSE made it possible to ensure employment for 2.3 million employees in 2019, i.e. 10.5% of employment in France (Solidaire, 2020). In Spain, the SSE provided 12.5% of employment in 2019 (Social, 2021). As for the Moroccan economy, the SSE was able to provide 5% of employment in 2019. This rate is estimated at 7.5% in 2020, or the equivalent of 175,000 jobs (MTHSSE, 2021)[9].

In view of the above, we attempt to assess the contribution of the Social Solidarity Economy in terms of job creation and to demonstrate how it could lead to the reduction of the unemployment rate in the Tangier-Tetouan Al-Hoceima state. This study is based on econometric modeling of which the aim is to study the relationship between SSE and employability in this state. The main component of the SSE is the cooperative sector. In 2020, the number of cooperatives in Morocco amounts to 40,531 of which 3,065 are installed only in the TTA state (ODCO, 2021).

The article revolves around the following question: What is the impact of the SSE, including its cooperative component on the evolution of employment in the state Tangier-Tetouan-Al Hoceima (TTA)?

[1] HCP: High Commission for Planning.
[2] MNE: Minister of National Education, Vocational Training, Higher Education and Scientific Research.
[3] Approximately 80% of employed persons in 2015 were employed in the informal economy (HCP, 2017)
[4] This rate is calculated by the author of this article based on the GDP values available on the HCP website.
[5] On average, the number of net jobs created between 2010 and 2019 is 69,000 jobs compared to 144,000 jobs over the period 2000-2009, according to the HCP databases.
[6] This rate is calculated by the author of this article based on the evolution of the population of Morocco by calendar year. The data are available on the HCP website.
[7] The working age population is expected to reach 35.8 million in 2050 compared to 24.6 million in 2015 (ONDH,2019)
[8] The "third sector" refers to all the actors (associations, cooperatives, mutuals) that carry out economic activities with a social aim, organized in an autonomous way and managed in a collegial manner, with a limited profitability and on a local scale with a strong involvement of the communities concerned
[9] Ministry of Tourism, Handicrafts and Social and Solidarity Economy

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In order to solve this problem, we will adopt a four-part plan. First, we will begin with a review of the literature on the different theories of unemployment and the social and solidarity economy in order to highlight the main concepts used and provide a theoretical basis for the different hypotheses formulated. Next, we will present a descriptive analysis of the statistical data inherent to the unemployment rate and the cooperatives in the studied state. We will then discuss the results of the econometric models. And finally, we will conclude our article with the main contributions of this research, its limits and the future perspectives of this scientific article.

2. Literature review and conceptual framework

2.1. The concept of unemployment

2.1.1. The statistical point of view

Unemployment is the share of the unemployed in the labor force aged 15 and over. This rate is obtained by dividing the number of the unemployed by the number of working people aged 15 and over (HCP, 2021). As an indicator, it is intended to inform economists and politicians about the situation of the labor market and to guide their decisions on employment policy. However, the elements used to calculate this indicator, which is the unemployment rate, must be representative of the situation in the labor market. When we take the example of a developing country such as Morocco, where the informal economy is widespread, the reliability of the unemployment rate depends on the methodology[10] and assumptions used to contain it in an indicator that should represent the reality of the labor market.

As defined by the International Labour Office (ILO), an unemployed person is "a person aged 15 years and over who simultaneously meets three conditions: 1- Being unemployed during a given week; 2- Being available to take a job within two weeks; 3- Having actively searched for a job in the last four weeks or having found a job that starts in less than three months" (Chardon & Goux, 2003). This definition is accepted by many countries around the world. However, it has limitations that correspond essentially to its basic assumption and to the methodological and statistical limitations that result from its definitional criteria. Indeed, the definition of the unemployment rate assumes of a tripartition of the population between inactivity, unemployment and employment (Freyssinet, 2004). In other words, the ILO definition assumes that the population must be divided into three groups: the inactive[11], the unemployed[12] and the employed[13]. For this definition to be relevant, the individual must belong to only one group at a time. It is difficult to distinguish between the unemployed and the employed, because being in the employed population does not stop with the exercise of an Income Generating Activities (IGA) but requires the satisfaction of a set of criteria that define the status of the wage earner.

Based on the ILO definition that states that the employed person is one who has *"a salaried or non-salaried job"* and referring also to the HCP definition that defines the employed person as *"a broad concept that encompasses all types of jobs, including casual work",* we can argue that counting informal workers as

[10] The methodology used by the HCP is as follows:
1. Sampling: three-stage stratified survey, sample size: 90,000 households of which 30,000 are rural.
2. Data collection in the field:
2.1- Interview method: survey conducted by direct household interview by HCP stateal staff;
2.2- Fieldwork duration: collection spread over the whole year;
2.3- Survey conducted by the Computer Assisted Data Collection System.

[11] According to the HCP, an inactive person is any person who is neither employed nor unemployed. It can be a pupil, a student, a housewife, a pensioner, etc.

[12] According to the HCP, an unemployed person is any person aged 15 and over, who is not employed and is looking for a job

[13] According to the HCP, the employed labor force includes all persons, aged 7 and over, engaged in the production of goods and services during a specified short reference period and all persons normally employed but absent from work due to a temporary impediment. This is a broad concept that encompasses all types of employment, including casual work, part-time work and all forms of irregular employment.

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employed and excluding them from the unemployed distorts the statistics and creates a discrepancy between the reality of the labor market and the figures reported. In addition, the discrepancy between the concept of unemployment, based on status, and the concept of employment, based on the perception of an income, weakens the evaluation of the informal economy.

2.1.2.… And the theoretical point of view

Unemployment must be considered as a phenomenon whose causes and solutions vary from one economic theory to another, hence the relevance of the analysis of economic theories that have been interested in the issue of unemployment, from traditional to contemporary theories.

2.1.2.1. Unemployment according to the neoclassical theory

According to neoclassical economists, the functioning of the labor market is based on the following assumptions:

- **The rationality of the economic agent**: whether he is a consumer or a producer, he is considered rational because he can maximize his utility and/or his profit. This depends on his ability to analyze the information around him through the utility function [14]or production function[15];
- **Pure and Perfect Competition (PPC):** the rational economic agent should evolve in a competitive environment in order to make optimal decisions that maximize his utility and/or profit. The PPC hypothesis is based on five conditions: the atomicity of the market, the homogeneity of the product, the free entry and exit of the market, the perfect transparency of the market and of information, and the free circulation of the factors of production (Menard, 2005).
- **Homogeneity of labor:** the labor force offered by individuals is considered homogeneous. That said, everyone can work in any occupation available on the market that corresponds to his or her characteristics, which will allow for competition between job seekers.

Based on these three assumptions, the decisions of rational economic agents are supposed to reach an optimum in the labour market. Moreover, by referring to the law of diminishing factor returns (Bruno, 2003), specifically when applied to the labour market (Gleizes, 2000), each additional unit of work increases production, yet by a smaller proportion than the previous unit. To this end, an increase in the quantity of labor leads, over time, to a decrease in productivity. According to neoclassical assumptions, marginal productivity[16] is a decreasing function. Thus, based on the logic of profit maximization, an employer should increase its demand for labor until the revenue generated by the last unit of production (labor input) equals its cost (wage). In other words, the firm's workforce is set according to marginal productivity and when marginal productivity would equal the market-determined wage. Following this same logic, the difference between the wage paid and marginal productivity becomes zero. However, when the wage paid reaches its maximum, the firm stops production because, beyond that point, it begins to make losses on the extra units. Therefore, the demand for labor forms a negative relationship with wages, because the higher the wages, the less willing firms are to hire. Similarly, when the supply of labor exceeds the demand for labor, wages must be reduced to reduce the number of unemployed. Still referring to the hypotheses put forward by neoclassicists, the economic agent makes a trade-off between time devoted to work and time devoted to leisure (Pronovost, 2007). This reflection leads us to stipulate that, in order to achieve a given level of utility, the provider of labor must make a choice between work and leisure. Ceteris paribus, the marginal utility resulting from additional consumption, itself financed by an additional quantity of work, must compensate for the decrease in utility in leisure. Thus, the choice to increase working time rests on the ability of the marginal wage to compensate for the loss of utility in leisure. We thus speak of a unit that the labour

[14] The utility function is U = U (C, L), with C and L being consumption of goods and leisure.
[15] The production function is Q = f (K, L), with Q, K and L being respectively the quantity produced, the capital used, and the labor force mobilized.
[16] Marginal productivity = the change in output resulting from hiring an additional person

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provider must forego in order to increase his income by one unit, while remaining at the same level of satisfaction. The ratio of these changes is the Marginal Rate of Substitution (MRS) (Thiry, 2015). The latter corresponds to the level that the unit wage must reach in order to induce the job seeker to come to the market to offer their labor force or the employee to offer an additional quantity of work. Thus, the higher the MSR, the higher the labor supply. Therefore, labor supply is an increasing function of the wage. The supply of labor is positively correlated with the real wage (S) and the demand for labor forms a negative relationship with the real wage (S). The confrontation between the supply and demand curves forms an equilibrium wage (S*). If the state sets a minimum wage and this is higher than the equilibrium wage (S*), this will create unemployment because in this case the supply of labor becomes higher than the demand for labor. However, in this situation, we can find willing unemployed[17]; individuals (Q2) who are willing to work for this minimum wage, but fewer employers (Q1) are willing to hire them. According to neoclassical economists, the adjustment of the disequilibrium situation necessarily involves a reduction in wages that would allow the excess supply of labor to be absorbed to the point of reaching equilibrium. For the classical economist Pigou, *"a decrease in money wages, even if accompanied by a decrease in prices, would reduce the level of unemployment"* (Béraud, 2008). Wages must therefore be reduced to stimulate the demand for labour and to allow for the reduction of unemployment. Moreover, Jacques Rueff questions the compensation system and the minimum wage, stating that *"by immobilizing wages, we can maintain for working workers a remuneration somewhat higher than that which they would receive under free competition; but we condemn others to unemployment and expose them to evils which unemployment insurance only slightly alleviates."* (Généreux, 1987). For John Maynard Keynes, the level of wages does not determine the level of employment, but the opposite is true. According to him, there is an inverse causality between wages and employment (Deleplace, 2018).

2.1.2.2. Unemployment from a Keynesian point of view

In his critique of the neoclassical theory of employment, Keynes states that the theory was based on two fundamental postulates, which can be found in the Theory of Unemployment of Pigou (Pigou, 1933), and which are discussed in the second chapter of the General Theory of Employment, Interest and Money (Keynes, 1936). In Keynesian theory, the first postulate, *"the wage is equal to the marginal product of labor"* is accepted, while the second postulate, *"the equality of the marginal utility of the wage to the marginal disutility of employment"* is rejected (Keynes, 1936). It should be noted that the first postulate refers to the labour demand function and the second postulate to the labour supply function. For Keynes, the explanations of unemployment do not depend on the preferences of the labor supplier because the wage for which the latter is ready to offer his labor can be below the market price without him finding a demand that corresponds to his labor supply. This phenomenon is referred to as involuntary unemployment, according to Keynes, who argues that *"involuntary unemployment exists if, in the event of a slight rise in the prices of labor consumption goods relative to nominal wages, the aggregate supply of labor willing to work under current wage conditions and the aggregate demand for labor under the same conditions are both above the previous level of employment"* (Darity & Horn, 1983). As a result, when real wages fall, the demand for labour increases because, according to Keynes, it is dependent on the real wage. Whereas the supply of labour reacts in the opposite direction, it is independent of the real wage. Indeed, contrary to what neoclassicals have stipulated, the supply of labor, according to Keynes, depends on the money wage because economic agents' reason in monetary terms (Combemale, 2010). Wages are not paid in the form of a basket of goods that absolutely meets the needs of workers but are paid in money (Chevalier & Vignoles, 2013). This is the reason why households do not decrease their labor supply when wages increase. Yet, they do not object to a decrease in their real wages due to inflation (Keynes, 1936, p. 38). They are therefore victims of

[17] According to neoclassical economists, the concept of voluntary unemployment corresponds to the situation of individuals who refuse to work for the equilibrium wage level (S*).

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monetary illusion[18]. Moreover, in his critique of neoclassical theory, Keynes considered that involuntary unemployment is attributable to insufficient effective demand. Indeed, it is according to this effective demand that firms decide on the quantities of products to offer on the market of goods and services. It is a primordial element, explaining the economic situation and the level of employment, and therefore the level of unemployment. Keynes thus shifts the explanation of unemployment from the labor market to the goods and services market, while introducing the effect of money (Van de Velde, 2008). In addition, the period 1945-1970 saw the emergence of the "neoclassical synthesis", a macroeconomic thought process that combined short-term Keynesian analyses with the work of long-term neoclassicals. The main proponents of this synthesis are John Hicks, Paul Samuelson and Robert Solow. Within this synthesis, the disequilibrium theorist "Malinvaud" distinguished between neoclassical and Keynesian unemployment (Malinvaud, 1980). According to him, neoclassical unemployment is the result of demand exceeding supply in the goods and services market and supply exceeding demand in the labor market. To rebalance the labor market, two solutions are possible: a decrease in wages or an increase in the prices of goods and services. According to the same economist, Malinvaud, Keynesian unemployment results from an excess of supply in both markets; on the one hand, firms lack demand for their goods and services and on the other hand, households find it difficult to get a job. To restore equilibrium, stimulus policies are needed to stimulate demand for goods and services as well as for labor (Malinvaud, 1980).

2.1.2.3. Unemployment according to the Marxists

In addition to the neoclassical and Keynesian view of unemployment, Marxists have also interpreted the issue of unemployment. For Marx, unemployment appears in the second half of the 19th century in the form of the "industrial reserve army" (Marx, 1867). He states in his book "Capital" that "*during periods of stagnation and average activity, the industrial reserve army weighs on the active army, in order to curb its pretensions during the period of overproduction and high prosperity. Thus, relative overpopulation, once it has become the pivot on which the law of supply and demand of labor turns, allows it to function only within limits that leave enough room for the exploitative activity and the dominating spirit of capital"* (Marx, 1867). For Marx, unemployment has its origin in social conflicts related to the distribution of produced wealth, where the unemployment rate is considered the essential weapon of capitalists. In fact, according to the Marxist approach, *"it is a matter of encouraging arrivals on the labor market in order to maintain the pressure exerted by what Marx called the industrial army of reserves"* (Husson, 2008). The objective of capitalists is therefore to increase the rate of exploitation by making the unemployment rate a tool for pressure and control of wages, while disconnecting the progression of wages from that of productivity gains (Husson, 2007). Unemployment is qualified as a phenomenon inherent to the capitalist system, and to reduce unemployment, Karl Marx recommends abolishing capitalism and the wage system by moving to a socialist society.

2.1.2.4. Contemporary theories of unemployment

In addition to neoclassical, Keynesian and Marxist theories, other economic theories have recently emerged to explain the issue of unemployment. Let us start with the *theory of investment in human capital* which states that a positive and increasing link exists between the degree obtained and the probability of finding a job and of receiving a high wage (Becker, 1964). From a microeconomic point of view, the expenditure made by the labour supplier on his education and training represents an investment because it enables him to acquire the knowledge and skills necessary and required by the labour market. Thus, the probability of easily finding a better paid and prestigious job increases for the individual who has acquired the best training and diplomas. From a macroeconomic point of view, when the supplier of labor benefits

[18] An employee is a victim of monetary illusion if he thinks that only his salary has increased in the event of a general rise in prices, i.e. inflation. The money illusion consists in reasoning from the nominal values of the economy and not from the real values, i.e. nominal values corrected for the effects of inflation.

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from additional training, it allows him to increase the productivity of the firm on the one hand, and its income on the other. Taking our reasoning a step further, additional training generates additional gains for the labor supplier and therefore profits for the community, because the most highly trained and therefore best paid individuals pay the highest taxes to the State (Kamanzi, 2006). The job search theory developed by (Stigler, 1962) is interested in analyzing the notion of unemployment through the different job search strategies used by job seekers as well as their impact on the duration of finding a job.

For their part, the filter and signal theories developed by (Carnoy & Carter, 1975) stipulate that employers base their decisions on the degree obtained, the level of prestige of the school attended, work experience, etc. The aim is therefore to filter out the most important factors in the job search. It is therefore a question of filtering the job suppliers according to a signal emitted.

And according to the theory of competition for jobs (Thurow, 1977), there are no prior skills as such for the job because the main skills are acquired during the job. Thus, the selection of candidates is made based on the ability of job seekers to be trained and to adapt to the production system. In addition, the diploma is perceived as *"a sign of aptitude, determining the individual's access to employment and training by the company. Thus, the company hires not the most productive, but the most able to be trained quickly, decreasing the training costs for the employer"* (Vultur, 2006).

The theory of segmentation and distribution of employment, on the other hand, stipulates that the labor market is divided into two segments according to the level of wages and stability of jobs. The first segment is made up of stable, well-paid jobs, while the second segment is made up of precarious, lower-paid jobs (Piore, 1978). In addition to wage and stability conditions, we distinguish the two markets through working conditions, social benefits, training, promotion conditions, etc. (Leduc & Genevois, 2012). In fact, according to the theory of segmentation and distribution of employment, unemployment results from the monopolistic behavior of labor suppliers belonging to the first segment in setting the wage level. Note that in this first segment, due to union power, wages are set without considering the real situation of the labor market. The wage level in this first segment is therefore qualified as rigid and higher than that which would have prevailed in a competitive system. As a result, firms set a lower level of employment than in a competitive labor market. This factor therefore causes unemployment to persist. Moreover, the work of Joseph Stiglitz and Carl Shapiro (Shapiro & Stiglitz, 1984) shows in their efficiency wage model that there is an increasing relationship between the wage rate and employee productivity. The higher the wage, the more productive the individual. Indeed, the efficiency wage is one of the explanations for the unemployment rate; since it is set by firms above the equilibrium wage in order to attract the most productive employees and maximize their efforts, full employment cannot be achieved, and unemployment persists.

For its part, the insider-outsider theory developed by (Lindbeck & Snower, 1989), attempts to explain why wages do not fall despite the presence of high unemployment (Simar, 2003), under the hypothesis that *"only workers with a job **(insiders)** carry weight in wage negotiations. This influence is exerted to the detriment of the unemployed, who are excluded from the negotiations **(outsiders)**. Employed workers also protect themselves by offering delays or severance pay, training, etc.* (Simar, 2003). Indeed, the insider-outsider and efficiency wage theories give different explanations to the issue of involuntary unemployment. However, they are complementary insofar as the volume of involuntary unemployment depends on what labor demanders are willing to give and what labor suppliers are willing to accept. Furthermore, with respect to the implicit contract theory developed by (Azariadis, 1975), it proposes a new explanation of unemployment by stating that *"in a low economic cycle, employees get to keep their jobs without a wage cut, in exchange for a smaller wage increase than they would have to give in a high economic cycle"* (Denis, et al., 2011). This says that during the recession period, wages remain stable and do not adjust downward. This is due to the contract previously concluded between the employer and the employee. Similarly, in a good economic climate, wages do not increase as much as they should (Landais, 2008). According to this theory, variations in wages are smaller than fluctuations in employment and production. As a result, *"wage flexibility is therefore called into question, the market can no longer adjust supply and demand"* (Denis, et al., 2011). It assumes of the risk aversion of labor suppliers who prefer to maintain their wages during periods of growth than to lose a large part of their wages in times of crisis (Silem, 2018).

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2.2. The theoretical concepts of the Social and Solidarity Economy

2.2.1.Social Economy

Charitable institutions and mutual aid organizations have existed since the Middle Ages and have been the cornerstone of the social economy (Monzón & Chaves, 2012). Indeed, the history of the social economy goes back to the earliest forms of human associations. There existed hetairies in Greece, professional colleges of artisans in Rome, and companionship associations in the Middle Ages (Jacques & Nyssens, 2017). However, it was not until the 18th century that the movements of associationism, cooperativism and mutualism experienced an extraordinary rise through the gathering of the working classes and the most vulnerable individuals within associations and cooperatives in order to protect themselves against the damage caused by the industrial revolution. In the same vein, we cite the example of the "Friendly societies" which have been very dynamic in the United Kingdom (Gueslin, 1987).

- The anchoring of the social economy in cooperative life

At first glance, the term “cooperative” was born in England with the creation of the Rochdale cooperative, which was founded near Manchester in 1844 and formed the prototype of the cooperative movement (Cannon, 2009). This "Rochdale Pioneer of Fairness" cooperative established the first principles of cooperatives that are currently known as the “Rochdale Principles”:

- Free and voluntary membership[19];
- One man, one vote - regardless of the capital contributed[20];
- Distribution of profits in proportion to members' activities[21];
- Limited remuneration of members' capital shares[22].

In addition to these principles, there is the notion of the “double quality” of the members. Indeed, the members of the cooperative are both “associates” and “users”. On the one hand, they own and democratically control the cooperative. On the other hand, they can benefit from the goods and services produced by them. It should be noted that the Rochdale Principles were taken up at the creation of the International Cooperative Alliance (ICA)[23] in 1895. This alliance has reformulated them, on several occasions, while remaining faithful to the spirit of the Rochdale Pioneers.

The Social Economy has also been forged around different ideological approaches, some of which are more radical and others more conservative, but they share a common characteristic: that of considering that *"the social economy wants to be, no more and no less, another way of doing the economy"* (Gueslin, 1987).

According to Desroche's research, we can identify the following ideological currents: the socialist school, the social-Christian school, the liberal-social school, the solidarist school and the philanthropic tradition (Jacques & Nyssens, 2017). Furthermore, it should be noted that several institutions have conducted research with the aim of delineating the specificities of social economy organizations, identifying their nature of activity and their modes of production and operation.

For example, in 1989, the Walloon Regional Executive set up a Walloon Social Economy Council whose mission was to formulate a definition of the Social Economy. The first definition of the Social Economy was therefore drawn up and approved in Belgium in 1990 by the Walloon Council for the Social Economy (WCSE). Based on this definition[24], we can identify the Social Economy by its four main types of legal status: cooperative, mutual, association and foundation. Furthermore, we would like to point out that, in

[19] The cooperative allowed anyone to join and become a member.
[20] The important element here is that for one person, the pioneers were invested in democracy, particularly through their involvement in Chartism, a grassroots movement that fought for one man, one vote.
[21] User-owner benefits distinguish cooperatives from businesses that pay profits to owners of capital.
[22] This principle is derived from the work of Robert Owen. Owen set a fixed and limited interest on the capital he borrowed to finance his factory. By paying a fair return rather than a speculative one, Owen was able to use the extra profits to provide better wages and working conditions for his workers.
[23] The International Co-operative Alliance (ICA) brings together, represents and assists co-operatives from around the world. Web link: www.ica.coop
[24] See Box 1 in the Appendix.

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some countries, the cooperative status is not very demanding and can be adopted by companies outside the Social Economy. It is therefore necessary to ensure that ethical principles are respected, as the legal requirements are not enough to attest to membership in the social economy. In the case of Morocco, law 122-12 [25]has clearly defined the status of the cooperative.
Otherwise, as mentioned above, the movements of associationism, cooperativism and mutualism experienced an extraordinary rise in the 19th century through the gathering of the working classes within associations and cooperatives in order to protect themselves against the damage caused by the industrial revolution. Thus, the emergence of the social economy was essentially due to the great precariousness of working conditions caused by industrialization. Today, the social economy approach makes it possible to highlight a third major sector alongside the public and private sectors in order to respond to the problem of unemployment that has not been resolved by either the classic market actors or the State.

2.2.2.Solidarity Economy

The concept of Solidarity Economy corresponds to very diversified practices such as solidarity finance, fair trade, microcredit, proximity services, sustainable tourism, sustainable agriculture, different collective entrepreneurial forms (Lasida, 2008). Indeed, the notion of Solidarity Economy was developed by Eme & Laville (Les petits boulots en question, 1988), in order to unveil the initiatives resulting from a double crisis; the first crisis is qualified as a value crisis, which appeared in the 1960s, and was characterized by the appearance of social movements whose objective is the improvement of the quality of life of employees, the prohibition of child labor and the integration of the elderly. The second crisis was economic and corresponded to the slowdown in growth and the rise in unemployment in the 1980s. To this end, the actors of the social economy, namely associations, mutuals, cooperatives and foundations, have tried to provide solutions to the problem of unemployment, against which neither the public nor the private sectors have proved capable of fighting.

In the same vein, we present the definition of solidarity economy as stipulated by J. L. Laville, which, according to him, refers to *"the set of economic activities subject to the will of a democratic action, where the social relationships of solidarity take precedence over the individual interest or the material project"* (Pepita, 2010).In addition, the solidarity economy is an extension of the social economy by articulating economic and political dimensions.

On the one hand, the economic dimension corresponds to the reciprocity in which the exchanges and initiatives of the actors (cooperatives, foundations, associations and mutual societies) are explained by their will to maintain or reinforce the socio-economic links between users, professionals, volunteers and/or territorial communities (Servet, 2007). These economic initiatives, of a solidarity nature, were born through a "reciprocal impulse" whose objective is to provide answers and solutions to different socio-economic problems. On the other hand, the political dimension of the solidarity economy is *"just as constitutive of the practices as their socio-economic dimension: the projects formulated aim at institutional change and not only production, which positions them as new democratic spaces by their dimension of public space in civil societies"* (Eme & Laville, 2004).

This means that there is a link between what is economic and what is political, because people were both creating associations, mutuals, cooperatives and advancing the principles of freedom and equality through demands, political protests so that there would be changes in the laws and regulations of employment.

2.2.3.Social and Solidarity Economy as a third sector of the Economy

The Social and Solidarity Economy (SSE) represents the third sector of the economy in which we find organizations whose activity intertwines an economic purpose and a social utility.

It can be Microenterprises, Economic Interest Groups, but also more widely Cooperatives, Associations, Mutual Societies and Foundations. Indeed, the objective of the actors of the Social and Solidarity Economy

[25] See box 2 in the Appendix for having some details concerning the definition of the cooperative and its management principles in Morocco.

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is not to make a profit but to bring solutions to the economic and social problems encountered by the most marginalized individuals. This third sector aims to offer jobs to the unemployed, promote solidarity finance, encourage fair trade and sustainable tourism, support the most sustainable types of production: sustainable agriculture, renewable energy, etc. The definition of SSE is still ambiguous, despite the multiple researches carried out on an international scale. This ambiguity has led to numerous names and definitions that change from one territory to another and from one school of thought to another, but they all have one thing in common: the existence of a third sector alongside the public and private sectors. According to Claude Vienney, the SSE is characterized by its actors, its activities and its specific rules, namely: democratic functioning, determination of the activity by the members of the organization, distribution of the surplus, production of sustainable and collective goods and services (Lévesque, Ninacs, Benoît, & William, 1997).

For Laville and his co-authors (Dacheux & Laville, 2003), the SSE is defined through an expanded conception of the economy and politics. Moreover, drawing on the work of Karl Polanyi, we define *"SSE from a substantive point of view by highlighting three economic principles: the market economy, the non-market economy and the non-monetary economy"* (Mendell & Marguerite, 2002).

According to other authors (Roustang, Laville, Eme, Mothé, & Perret, 1996), the SSE can be defined as a plural economy because several principles and resources are mobilized. In addition, the SSE occupies an intermediate position between the public and private sectors and is characterized by its socioeconomic and socio-political dimensions (Evers & Laville, 2004). In the American literature, the SSE is qualified as a "Third Sector" where we find nonprofit organizations, mutuals, associations, cooperatives and any other form of organization that redistributes its earnings with its members and carries out an activity whose utility is both economic and social ((Evers & Laville, 2004) ; (Vaillancourt, 1999) ; (Gui, 1992)). For its part, the concept of the "Third Sector" also refers to NonProfit Organizations (NPO); these are defined as non-profit organizations operating in a sector capable of addressing socio-economic problems, such as unemployment and poverty, that have not been solved either by the state or by the private sector (Salamon, Anheier, List, Toepler, & Sokolowski, 1999). Thus, in the most recent scientific research, social innovation is increasingly associated with the SSE. In the same vein, SSE actors *"are more likely than others to be the bearers of social innovations for the good reason that they generally emerge to satisfy needs and aspirations that are not satisfied or poorly satisfied by the market or the State"* (Levesque & Mendell, 2005).

Then, according to (Chaves & Monzón, 2005), SSE is a sector that brings together economic actors who share values and principles with the aim of developing society on the economic and social levels.

According to the Ministry of Economic and General Affairs (MEGF) in Morocco, SSE is defined as follows:

Box 3. Definition of SSE according to the MEGF in Morocco

"The SSE corresponds to economic initiatives seeking to produce goods or services, to consume and save differently, in a way that is more respectful of people, the environment and the territories:
-Finality of services to members/community;
-Principles of solidarity and responsibility.
-A democratic control by the members according to the principle of one person = one vote and not one share = one vote.
-A development dynamic based on a territorial anchorage and a citizen mobilization".

Source: (MCAEG, 2011)

For its part, the Economic, Social and Environmental Council (ESEC) in Morocco proposes the following definition of the SSE:

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Box 4. Definition of SSE according to the ESEC in Morocco

"The social and solidarity economy is the whole of the economic and social activities organized in the form of formal structures or groupings of physical or moral persons with a purpose of collective and societal interest, independent and enjoying an autonomous, democratic and participative management and where the membership is free. Also included in the Social and Solidarity Economy are all institutions with a mainly social purpose, proposing new economically viable and inclusive models by producing goods and services centered on the Human element and included in sustainable development and the fight against exclusion".

Source: (Annual Report, 2015)

3. Relationship between the unemployment rate and SSE in Morocco "Case in the Tangier, Tetouan, Al-Hoceima State"

3.1. Contextualization and statistical analysis of the variables studied

3.1.1.Analysis of unemployment rate in the Tangier-Tetouan-Al Hoceima State

Nationally, the unemployment rate rose in 2020 to 11.9%, compared with 9.2% in 2019. It rose from 7.8% to 10.7% for men and from 13.5% to 16.2% for women. As for the graduate category, it increased from 15.7% to 18.5% between 2019 and 2020 (HCP, 2021).

Regionally, we note that in 2020, five states account for 72% of the total working population. The Casablanca-Settat state tops the list with (22.4%) of the active population, followed by Rabat-Salé-Kenitra (13.5%), Marrakech-Safi (13.4%), Fez-Meknes (11.6%) and Tangier-Tetouan-Al Hoceima (11%). As for the evolution of the unemployment rate in the TTA state, it is 10.4% in 2020 and 11.9% in Q1-2021. We note, moreover, that in terms of the activity rate, the TTA state has posted a value of (48.1%) or a rate higher than the national average having recorded (45.5%) (HCP, 2021).

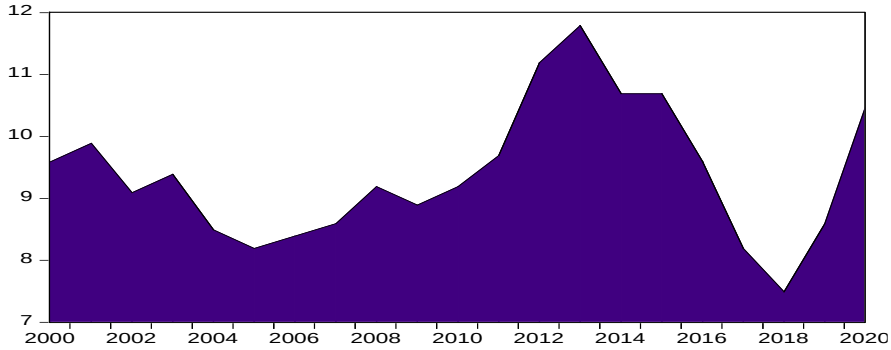

Figure 1: Annual change in the unemployment rate in the TTA state, between 2000 and 2020.

Source: HCP data, graph produced by the authors.

On average, the unemployment rate in the state Tangier-Tetouan-Al Hoceima (TTA) recorded 9.00% during the period 2000-2010, and 9.85%[26] during the period 2011-2020. Note that it reached its highest value in 2013 to settle at 11.80% and its lowest value in 2018 by posting 7.50%.

3.1.2.Number of cooperatives in the TTA state

In Morocco, the number of cooperatives recorded 40 531 in 2020 with a total of 646 901 members. It should be noted that agricultural cooperatives are at the top of the list, recording a total of 25,646 cooperatives and 458,115 members, followed by those specializing in the craft with a total of 7,833 cooperatives and 65,599 members (ODCO, 2021). As for the geographical distribution in 2020, the state of

[26] Author's Calculations.

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the East comes at the top of the list, with 5,517 cooperatives and 79,602 members, followed by the state of Marrakech with 4,364 cooperatives and 88,528 members. For its part, the state TTA highlights 2 264 cooperatives and 28 488 members, according to statistics that we were able to recover from the management of the ODCO. Indeed, most cooperatives located in the TTA state are specialized in the agricultural and craft sectors, as are other cooperatives on a national scale[27].

In the same vein, we note that the number of agricultural and craft cooperatives installed in the state TTA, amounted respectively in 2020 to 1 375 and 567. Nevertheless, it seems important to mention that there has been a structural change in the cooperative fabric in Morocco and this, from the year 2015, date of entry into force of the law 112-12 on Moroccan cooperatives[28].

The implementation of Law 122-12[29] has impacted the operation of cooperatives and as demonstrated above, their number in "the state Tangier, Tetouan, Al-Hoceima" has dropped sharply in 2016, reaching 922 against 1485 in 2015. All other things being equal, the number of members of cooperatives has also decreased, posting 20,762 in 2016 against 39,152 in 2015.[30]

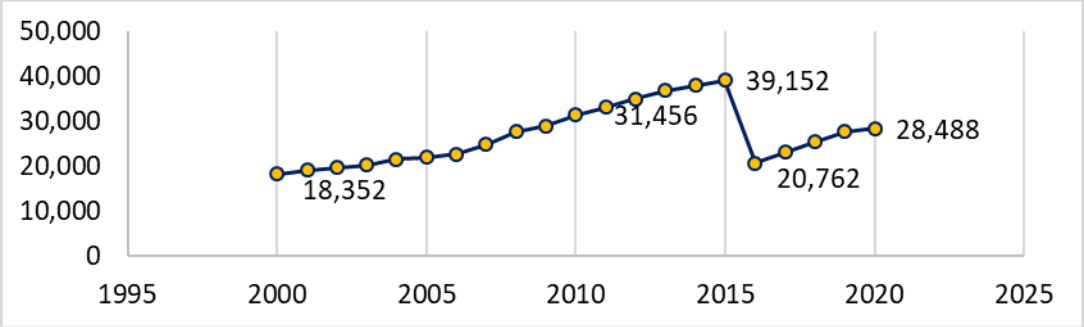

Figure 3. Evolution of the number of members of cooperatives in the TTA state.
Source: ODCO data, graph by the authors.

We also point out that all this data has been processed and does not include cooperatives that are not compliant with Law 112-12. Indeed, after a 47% decrease in 2016, the number of members marked a 12% increase in 2017 to show 23,161. It continued an upward trend to reach 28,488 members at the end of 2020.

3.1.3.Support programs dedicated to cooperatives

Morocco has set up programs to benefit the cooperative sector, given its role in creating jobs and fighting poverty and insecurity. The different support programs put in place aim to develop the sustainability of cooperatives and Income Generating Activities (IGA) by providing technical and financial support during their production and marketing phases. Among the main programs, intended for this purpose, we cite: "NIHD[31]", "Mourafaka[32]", "GMP[33]", "Moazara[34]", "Morocco-Attamkine[35]" and recently "RRTTEE[36]".

[27] See Figure 2 in the Appendix (Annual change in the number of cooperatives in the TTA state between 2000 and 2020.
[28] https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/107356/132106/F-2102476599/MAR-107356.pdf
[29] The objective of law 112-12 is to simplify the procedure for creating cooperatives. Thus, the obligation to obtain an approval has been abolished and the minimum capital for their constitution is fixed at 1,000 dirhams.
[30] The data was provided to us by ODCO management
[31] National Initiative for Human Development.
[32] Post-creation" support program is the result of a partnership between the MEFRA and the ODCO, adopted as part of the 2015 strategy for the craft industry and designed to support newly created cooperatives (less than two years old). http://www.odco.gov.ma/fr/content/programme-mourafaka
[33] Green Morocco Plan
[34] This program is intended to finance innovative projects for the benefit of actors in the Social Solidarity Economy, in particular: cooperatives, associations and networks of associations operating in the SSE sector https://MTHSSE.gov.ma
[35] "Morocco-Attamkine" is a program adopted in 2020 by the Ministerial Commission for Equality.

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In Fact, on the technical level, the NIHD accompanies the cooperatives from the creation stages to the labeling, certification and marketing of their products. Financially, the NIHD provides up to 60% of the capital invested (or a maximum of 300,000 MAD). The rest must be contributed in cash or in kind by the project leader or the cooperative. Thus, in order to benefit from NIHD support, the number of young people and women members of the cooperative must exceed 30% of the workforce (NIHD, 2021). Immediately after the creation of the cooperative, the NIHD intervenes through its famous "Mourafaka" program; this is a post-creation support program intended to strengthen the production capacities of newly created cooperatives in Morocco (500 per year), whose objective is to ensure income for 200,000 direct or indirect beneficiary members. The "Mourafaka" program has three components: a strategic diagnosis of the cooperative to identify its strengths, weaknesses, opportunities and threats; the organization of group training sessions focusing on management, marketing and commercialization techniques; and individual coaching for the benefit of the cooperative's members. In addition, the "Mourafaka" program is based on the development of the following approaches: innovation, equality between men and women, territoriality, environmental protection, inclusive growth and sustainable development (MTHSSE, 2018). The GMP, for its part, is included in the strategies of inclusive and sustainable development. Indeed, through its 2nd pillar, the GMP has helped strengthen the development of agricultural cooperatives and boost employment in rural areas of Morocco. In 2020, the State has planned to carry out 989 solidarity farming projects for the benefit of 730,000 beneficiaries, for a budget of 14.5 billion MAD (ADA, 2021).

In addition, in 2020 we saw another program developed by MTHSSE to mitigate the economic and social repercussions of Covid-19 that affected the cooperative sector. This program is called "Moazara". It has been endowed with an envelope of 2 billion MAD intended to support cooperatives and to coalesce the efforts of SSE actors in order to promote the inclusive growth of women and youth. In figures, out of 200 applications received by MTHSSE, 42 projects have been selected within the framework of the "Moazara" program and are distributed as follows 38% correspond to IGAs, 24% to projects for the creation of digital marketing platforms, 19% are projects for the creation of distance learning platforms and 19% are projects aimed at capacity building of SSE actors. It should be noted that 52% are projects aimed at the economic and social development of rural women.

For its part, the "Morocco-Attamkine" program was also adopted in 2020 by the MSSDEF[37] in order to develop the economic empowerment of women and girls. It should be noted that this program has 3 strategic objectives, perfectly aligned with the Sustainable Development Goals, namely: *"to reach 30% of the female employment rate; to double the proportion of women graduating from vocational education, in order to be at the same level as men; to promote an environment conducive to the economic empowerment of women and girls"* (MSSDEF, 2020, p. 3). Indeed, in order to achieve gender equality in the workplace, the "Morocco-Attamkine" program aims to promote entrepreneurship and SSE through the strengthening of women's cooperatives. In the same vein, we note that Moroccan women's cooperatives have increased from 259 in 2014 to 1815 in 2015, to 2280 in 2016, 2923 in 2018 and 4524 in 2019 (MSSDEF, 2020, p. 36).

For its part, the program "Revitalization of Moroccan Rural Territories through Employment and Entrepreneurship in the agricultural and para-agricultural sector (RRTTEE)" launched in 2021 by the MAMRW [38]aims to provide technical and financial support to rural entrepreneurship and agricultural cooperatives and strengthen their marketing channels. We specify that this program targets 3 states "Fez-Meknes, Oriental, Souss-Massa" and it is endowed with a total envelope of 70 million Euros, distributed as follows: Loan from the French Development Agency (EUR 50 million) and grant from the European Union (EUR 20 million) (MAMRW, 2021).

[36] "Revitalization of Moroccan Rural Territories through Employment and Entrepreneurship: The total envelope dedicated to this program amounts to EUR 70 million, distributed as follows AFD loan (EUR 50 million) and European Union (EUR 20 million).
[37] Ministry of Solidarity, Social Development, Equality and Family.
[38] The Ministry of Agriculture, Maritime Fishing, Rural Development and Water and Forests.

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4. Econometrics Models

4.1. Simple linear regression model

We used econometric modeling to assess the contribution of SSE, through the participation of cooperatives in employability in the TTA state. For this purpose, we chose the variables below, over a period from 2000 to 2020.

Table1. Variables of the simple linear regression model

Period	Coding	Variables	Type of variable
2000-2020	**CHO**	Unemployment rate in the state (TTA)	Endogenous
	ADH	Number of members of cooperatives in the state (TTA)	Exogenous

Source: Author's.

Our basic econometric model is designed as follows:

$$CHO = \alpha 0 + \alpha 1\ ADH + \varepsilon \quad \textbf{(1)}$$

The signs of the theoretically expected coefficients should be negative, since an increase in cooperative membership would normally contribute to a decrease in the unemployment rate in the ATT state. Prior to estimation, we took the variables in our model in logarithm[39] rather than in level. As a result, the econometric specification is described as follows:

$$LCHO = \alpha 0 + \alpha 1\ LADH + \varepsilon \quad \textbf{(2)}$$

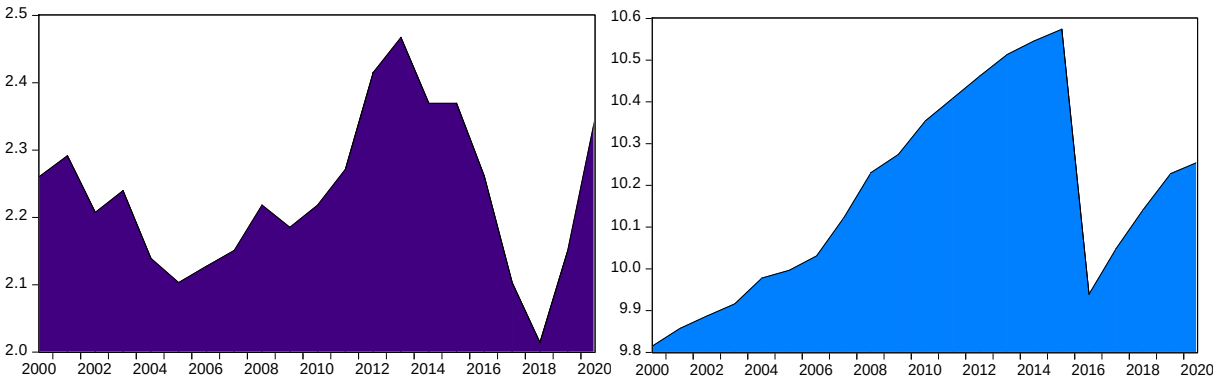

Figure 4. Graphs of logarithmic variables "LCHO" & "LADH" in the TTA state

Source: Author's.

Based on the above graphs, the two variables are non-stationary (especially on average) but can be cointegrated (almost identical evolution over the whole sample). To validate the non-stationarity of the two variables, we applied the **"Dickey Fuller Augmented unit root test"** and the **"Correlogram test"**. Indeed, the models for performing the "Dickey Fuller Augmented"[40] tests are based, under the alternative hypothesis **$|\varphi 1| < 1$**, on the ordinary least squares' estimation of these three models:

$$\Delta x_t = \rho x_{t-1} - \sum_{j=2}^{p} \phi_j \Delta_{t-i+1} + \varepsilon_t \text{ ; Avec } \varepsilon t \rightarrow i.i.d. \quad \textbf{(3)}$$

$$\Delta x_t = \rho x_{t-1} - \sum_{j=2}^{p} \phi_j \Delta_{t-i+1} + c + \varepsilon_t \text{ ; Avec } \varepsilon t \rightarrow i.i.d. \quad \textbf{(4)}$$

$$\Delta x_t = \rho x_{t-1} - \sum_{j=2}^{p} \phi_j \Delta_{t-i+1} + c + bt + \varepsilon_t \text{ ; Avec } \varepsilon t \rightarrow i.i.d. \quad \textbf{(5)}$$

[39] We used the log-log specification so that the distribution of our variables is not very skewed or heteroscedastic.
[40] Bourbonnais. Econometrics. Dunod,2018. 416 p.

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The various stationarity tests [41]carried out show that the "LCHO" variable is integrated of order (2) whereas the "LADH" variable is integrated of order (1). This means that we cannot estimate a cointegrating relationship between the two variables. The results of the simple linear regression model show a positive relationship between the evolution of the unemployment rate and the evolution of the number of cooperative members in the TTA state. These results are contrary to the signs theoretically expected. In addition, the coefficient of determination R^2 is very low, i.e. 8.5% for the period 2000-2020. From these first results, we argue that the unemployment rate in the TTA state cannot be explained solely by the number of cooperative members, but also through other quantitative and qualitative factors.

Table2. Results of the simple linear regression model

Model to be estimated	$DLCHO2 = \alpha_0 + \alpha_1 DLADH + \varepsilon$ **(6)**
Period of analysis	2000-2020
Estimation Equation	DLCHO2 = 0.005 + 0.186 DLADH **(7)**
R-squared	8.5 %

Source: Author's Calculations.

4.2. Estimation of the econometric model through multiple linear regression

Considering that, since the launch of the National Initiative for Human Development (NIHD), in 2005, the number of cooperatives has experienced strong increases and this, because of their potential to integrate small producers in the economic fabric especially in the agricultural sector. And taking into consideration the structural change that the cooperative sector has experienced since 2015 and this, following the entry into force of Law 112-12 which has impacted the method of calculating the number of cooperatives and their members. We will introduce a third variable and analyze the econometric relationship between our different variables over the period 2005 and 2015.

Table3. Results of the simple linear regression model

Period	**Coding**	**Variables**	**Type of variable**
2005-2015	CHO	Unemployment rate in the state (TTA)	Endogenous
	ADH	Number of members of cooperatives in the state (TTA)	Exogenous
	NBC	Number of cooperatives in the state TTA	Exogenous

Source: Author's.

Our basic econometric model is designed as follows:

$$LCHO = \alpha 0 + \alpha 1\ LADH + LNBC + \varepsilon \quad \text{Avec N= 11 years} \qquad \textbf{(8)}$$

This time the LCHO variable became stationary after making the first difference, while the stationarity of the exogenous variables was only validated after the second difference.

Table4. Results of the multiple linear regression model

Model to be estimated	$DLCHO = \alpha_0 + \alpha_1 DLADH2 + \alpha_2 DLNBC2 + \varepsilon$ **(9)**
Method Applied	Ordinary Least Squares (OLS)
Period of analysis	2005-2015

[41] See Figures 5 and 6 in the Appendix.

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Estimation Equation	DLCHO = 0.02 + 1.72 DLADH2 – 0.76 DLNBC2 **(10)**
R-squared	40.42%

Source: Author's Calculations.

The results of our second model show the existence of a positive relationship between the unemployment rate and the membership of cooperatives in the Tangier, Tetouan, Al-Hoceima state. However, they show a negative correlation between the evolution of the unemployment rate and that of the number of cooperatives in the TTA state. According to the results obtained, an increase of 10% in the number of cooperatives can decrease 0.76% of the unemployment rate in the TTA state. Thus, the coefficient of determination shows that the variations of the exogenous variables can explain 40.42% of the variations of the endogenous variable (unemployment rate).

5. Discussion of the results

First, the central question of this scientific research is to appreciate the contribution of the SSE, especially its cooperative component, in terms of job creation in the state of Tangier-Tetouan-Al Hoceima. The statistical analysis that we conducted on the selected variables revealed that most cooperatives in the state studied are engaged in agricultural and craft activities and this, like other cooperatives located in other states of the kingdom. It should be noted that in 2020, 60% of cooperatives located in the TTA state, operate in the agricultural sector, while 25% of cooperatives are engaged in craft activities. The statistical analysis has also shown that during the period 2000-2020, there have been two structural changes affecting the evolution of the number of cooperatives and members. The first change is explained by the creation of the INDH, in 2005, bringing a strong dynamism to the cooperatives in Morocco and in the TTA state. The second change is due to the entry into force of Law 122-12, in 2015, which has strongly impacted the way the number of cooperatives is calculated.[42] For this reason, the observations of our second econometric model were limited to the period between 2005 and 2015. The choice of this period aims, on the one hand, to include the positive effect of the INDH on the evolution of cooperatives, and on the other hand, to eliminate the impact of law 122-12 on the way cooperatives are registered. The results obtained reveal a negative correlation between the evolution of the number of cooperatives and the unemployment rate. In fact, a 10 percent increase in the number of cooperatives in the TTA state should lead to a 0.76 percent reduction in the unemployment rate. This indicates that cooperatives and SSE, in general, could contribute to solving the unemployment problem in the TTA state. However, many constraints have been detected that, in our opinion, prevent the evolution and development of the action of cooperatives in the TTA state, among others:

- Ignorance of the existence of the SSE sector and the cooperative, especially on the part of the rural population;
- The high rate of illiteracy and lack of schooling as well as the absence of an economic culture among a large part of the population, especially in rural areas, which deprives them of knowing the socio-economic benefits they could get from the cooperative;
- Roads in rural areas need to be maintained and/or improved in order to reduce the distance that members walk from their homes to the cooperative. Indeed, most members would have to walk several kilometers to reach the cooperative, which results in low productivity due to lost time and fatigue. In the same vein, we would like to point out that, according to the latest available statistics,

[42] The statistics do not include cooperatives that do not comply with Law 122-12 and represent only those cooperative records received from local registries (courts), processed and entered the Central Cooperative Registry (ODCO).

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the National Rural Road Accessibility Index (INARR)[43] increased from 54% in 2005 to 75% in 2012 (SSATP, 2014), , reflecting the low access of citizens to the road and in turn illustrating the effect that the existence of roads could have on the activity of cooperatives located in rural areas ;

- The low rate of households with a vehicle in rural areas. Thus, according to the (HCP, 2018, p. 68), the rate of rural households with a car was only 5.4% in 2015;
- Collective transport is not well developed in rural areas, which makes it difficult for members to travel from their homes to the cooperatives;
- The transportation of raw materials to production sites or finished products to sales points is also a real constraint for cooperatives;
- In addition to the problems of education, illiteracy and school dropout, the members' skills, especially those inherent to the management of the cooperative (accounting, marketing, commercialization techniques...) also represent one of the constraints that hinder the development of cooperatives and of the SSE in general.

6. Conclusion

The econometric results show the existence of a negative correlation between the evolution of the number of cooperatives and that of the unemployment rate in the TTA state, this means that the increase of the number of cooperatives in that area leads to a reduction in the number of unemployed people. We can therefore argue that, alongside the public and private sectors, the SSE via its cooperative component also contributes to the decrease of unemployment in the TTA state.

Nevertheless, as we have pointed out, fighting unemployment using cooperative action is not limited in the number of cooperatives created annually or the number of people who join them, but it also depends on a multitude of qualitative factors that we have raised during this research.

First, a large part of the population is unaware of the existence of the Social and Solidarity Economy (SSE), that's the reason why we recommend making citizens know about the socio-economic advantages which the actors of the SSE can offer, particularly in terms of job creation.

In addition, some necessary conditions must be available to SSEOs[44] so that they can develop their activities and create more added value in the TTA state. In this regard, we recommend improving access to rural roads and providing collective transportation to cooperative members to ease their movement in order to increase their productivity. It is also necessary to provide these cooperatives with fleets of vehicles to transport raw materials to factories and final products to points of sale.

In the same vein, we recommend providing cooperative members with the training they need to acquire and/or develop their management skills, as well as accounting, management control, financial analysis, marketing and communication techniques.

Thus, we recommend the creation of digital platforms in order to ease their products marketing and develop their customer portfolio locally and nationally.

Finally, we would like to specify that cooperatives are part of a circular and inclusive economic approach, which, beyond the creation of employment and the fight against poverty, consists in reinvesting the profits

[43] This index measures the proportion of the population living in localities (PT) located less than one (1) kilometer from an all-weather road (PD); only the populations of douars with more than 50 households are considered. The formula is as follows: (INAAR = PD/PT).
[44] Social Solidarity Economy Organizations.

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made in education, training, transport, health of its members and their families. To this end, we argue that cooperatives represent a lever for emancipation of rural areas and a major player in the human, economic and social development of our country.

7. Research perspectives

The objective of this research was to assess the contribution of the Social Solidarity Economy and particularly that of the cooperatives in terms of job creation. The econometric study was based on quantitative data (number of cooperatives, number of members, unemployment rate) concerning the Tangier Tetouan Al-Hoceima state, over the period 2000-2020. The results obtained are significant. However, in order to better evaluate the role of cooperatives in the fight against unemployment, it would be interesting to introduce qualitative variables in our econometric model. Therefore, following this research work, we would be interested in interviewing cooperatives managers located in the TTA zone. We would like to point out that it would be interesting to look at other socio-economic indicators and other states to study, analyze, and criticize the contribution of SSE and cooperatives in sustainable development in Morocco.

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Manuscript received: 12.02.2022

Manuscript received in revised form: 10.09.2022

Manuscript accepted: 15.09.2022

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 24, Issue 2/ 2022), pp. 140 - 164
URL: http://www.reaser.eu
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Appendixes

Box 1. Definition of the social economy according to the WCSE

"The social economy consists of economic activities carried out by companies, mainly cooperatives, mutuals and associations whose ethics are reflected in the following principles:
- The aim is to serve the members or the community rather than to make a profit;
- Autonomy of management;
- Democratic decision-making process;
- Primacy of people and work over capital in the distribution of income".

Source: Walloon Council of the Social Economy, 1990.

Box 2. Definition of a cooperative according to Law 122-12

The cooperative is a group of natural and/or legal persons, who agree to join to create an enterprise, allowing them to satisfy their economic and social needs, and which is managed in accordance with the fundamental values and principles recognized worldwide in the field of cooperation, notably:
- Voluntary and open membership;
- Democratic power exercised by the members;
- Economic participation of members;
- Autonomy and independence;
- Education, training and information;
- Cooperation between cooperatives;
- Commitment to society.

Source: Cooperative Law in Morocco 122-12, 2015.

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Review of Applied Socio- Economic Research
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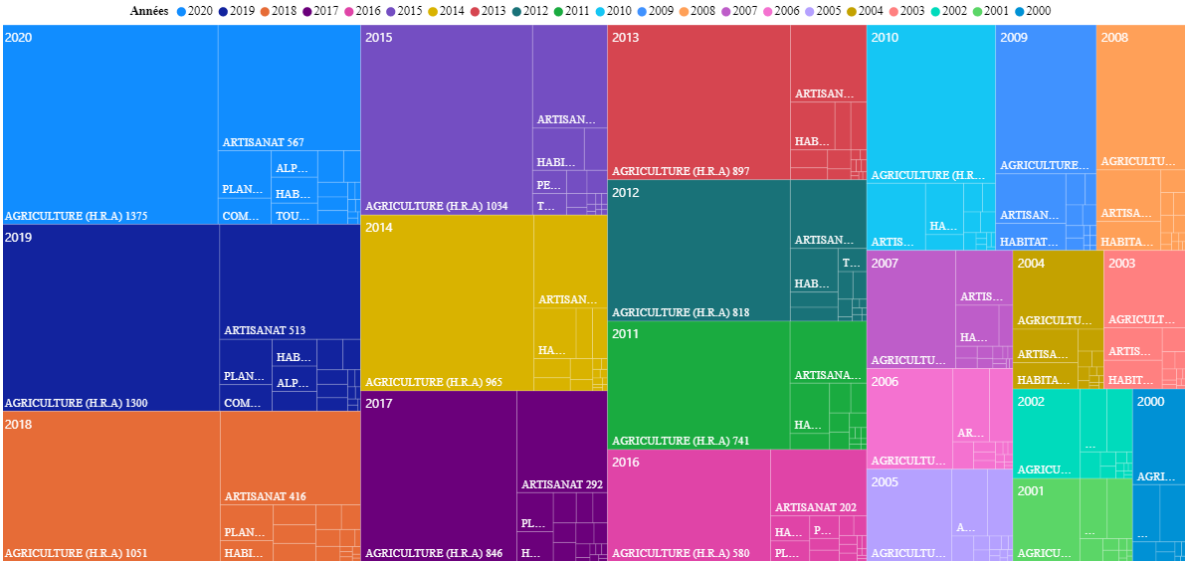

Figure 2. Annual change in the number of cooperatives in the TTA state between 2000 and 2020.

Source: ODCO data, chart produced by the authors.

Modèle 3

Null Hypothesis: D(LCHO,2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.849398	0.0060
Test critical values:	1% level	-4.571559	
	5% level	-3.690814	
	10% level	-3.286909	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 18

Modèle 1

Null Hypothesis: D(LCHO,2) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.9706345...	5.092055...
Test critical values:	1% level	-2.699769189532108	
	5% level	-1.961408604260133	
	10% level	-1.606609865417395	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 18

Modèle 2

Null Hypothesis: D(LCHO,2) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.9254775...	0.001145...
Test critical values:	1% level	-3.857386184901986	
	5% level	-3.040390762018099	
	10% level	-2.660551212560913	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 18

Corrélograme

Date: 06/15/21 Time: 00:47
Sample: 2000 2020
Included observations: 19

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.16...	-0.16...	0.6272...	0.428...
		2	-0.00...	-0.03...	0.6293...	0.730...
		3	-0.08...	-0.09...	0.7916...	0.851...
		4	-0.05...	-0.08...	0.8670...	0.929...
		5	0.003...	-0.02...	0.8674...	0.972...
		6	-0.35...	-0.38...	4.6399...	0.590...
		7	0.235...	0.101...	6.4840...	0.484...
		8	-0.10...	-0.11...	6.8733...	0.550...
		9	0.121...	0.037...	7.4586...	0.589...
		1...	-0.09...	-0.12...	7.8342...	0.645...
		1...	-0.13...	-0.22...	8.7424...	0.645...
		1...	0.239...	0.084...	12.011...	0.444...

Figure 5. Calculation of the ADF tests and correlogram tests of the LCHO variable after the 2nd difference.

Source: Author's calculations.

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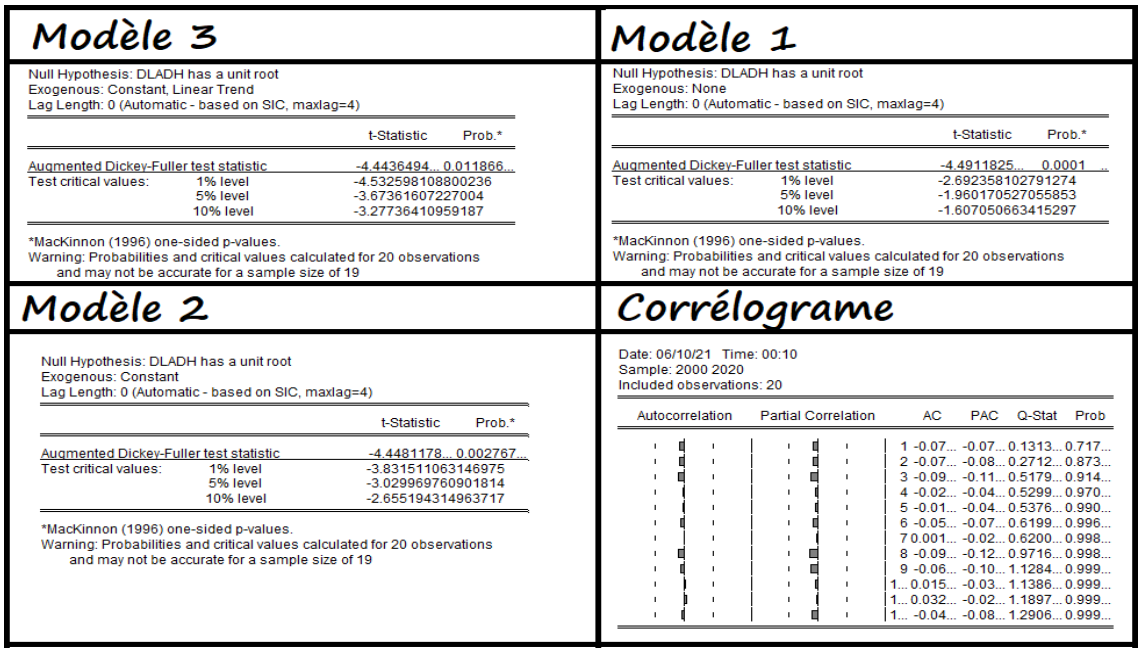

Figure 6. Calculation of the ADF tests and correlogram tests of the LADH variable after the 1st difference.

Source: Author's calculations.

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URL: http://www.reaser.eu
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An investigative analysis of the impact of Covid 19 on the Indian share market

Shiv Kumar Sharma [1+], Dr. Jutimala Bora [2]

[1] Ph.D. Scholar, Dibrugarh University, Assam, India
[2] Assistant Professor, Dibrugarh University, Assam, India

Abstract: *The share prices respond to the information available in the public domain at the same time. It is reflected in the indices of the stock exchanges. We can say that any action of a large scale taken by the government or any reputed institution has a direct impact on the share market, be it positively or negatively. In such a situation, it becomes inevitable for an investor to know, based on experience, how the market reacts to similar past events. To safeguard the financial loss which may arise as it becomes very much essential to study such events. Such an event is the declaration of coronavirus or Covid19 as a pandemic by the World Health Organisation; a pandemic implies that it has an impact on large geographical areas worldwide. Thus to study the risk of covid19 as a pandemic declaration on the Indian stock market, this study has been carried out. Four sectoral and two thematic indices were taken for the study. The event study methodology has been used for the study. The Average Abnormal Return and Cumulative Average Abnormal Return of the -20 trading days and +20 post and pre-event data have been studied. On AAR there is no difference in pre and post-event while in CAAR there is significance. While in the individual index Nifty Pharma and Nifty Energy have significance.*

Keywords: Covid 19, Event study, Indian, Pandemic, Share market, Sectoral index, Thematic index.

JEL Codes: C12, G1, G14

1. Introduction

The financial market is the market where the trading of securities is carried out. Financial markets act as an economic barometer of the country. It shows the country's growth and the possibility of growth in the country. The share market is a part of the financial market; it is affected by both macro and microeconomic events. Some events have a positive impact on the share market which means there is growth in the index and share price, whereas some have a negative impact which implies there is a decline in the market index as well as in the share price. Studying the impact and market condition is of much importance for future forecasting and planning investment decisions in similar events in the future. A pandemic is also such an event; it is an outbreak of a disease which can impact a large population over a wide geographical area beyond national boundaries. In the financial world, such events are treated as systematic risks, like the risk of the disease cannot be diversified. After it was declared by the World Health Organization (WHO) as a pandemic, many steps were taken by the government, which caused fluctuation in the financial market. Covid19 or Novel Coronavirus is an infectious virus causing respiratory illness with symptoms such as fever, cough, and difficulty in breathing. It reported its first case in December 2019, in Wuhan city of Hubei Province of China. Till April 2020, our scientists are trying to develop the vaccine. But no permanent cure is available for the virus SARS-CoV-2. It has spread to many countries of the world. On 30th January 2020, India reported its first Covid19 positive case in the state of Kerala. To control the disease, many states and union territories have invoked the Epidemic Disease Act 1897. WHO- World

[1+] **Corresponding author**. Tel.: +91 7399730028; Don Bosco College, Assam, India; *Email address*: shiv9591@gmail.com

ISSN: 2247-6172
Review of Applied Socio- Economic Research
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Health Organization declared Covid19 as a pandemic on 11th March 2020. It becomes necessary to study how the market has been affected due to its declaration as a pandemic.

The financial market acts as a facilitator for the transfer of funds between borrowers and lenders. It acts as a transmission mechanism between the parties. The financial market is classified into two segments (a) Money Market and (b) Capital Market. The money market handles short-term credit, whereas; the money market handles medium and long-term credit. The capital market is further segmented into the primary and secondary markets. The secondary market is also called the stock market. In India, there are two major stock exchanges BSE- Bombay Stock Exchange and NSE- National Stock Exchange. BSE is the oldest exchange in Asia; it has existed since 1875. NSE was founded in 1992 and the exchange started trading in 1994. Both NSE & BSE follow the same trading hours, trading mechanism, and settlement process. As of February 2020, 5,518 firms are listed in BSE. 1,799 companies are listed in NSE as of 31st December 2019. In terms of volume traded, NSE is the largest stock exchange in India. The market is regulated under the supervision of the Securities and Exchange Board of India (SEBI).

(Patel.M et.al. 2016) analyzed the efficiency of the Indian stock market related to the budget announcement by the Union government. The event study methodology was applied in the study for the analysis of the market data. AARs, CAARs, and t-value were analyzed during the study event period of -20 and +20 days of the event. It was found that except for +3 days, the statistics were not significant. The study shows that the investors were not able to earn an abnormal return for the targeted companies. (Gakhar. D.V et.al. 2015) reports the impact of the Union Budget on the Indian Stock Market and tries to measure the volatility and average return over short, medium, and long-term periods for pre and post-budget. The study was carried on for five budget years. The researcher uses paired T-test and F-test. Researchers conclude that the budget has the most impact in a short period. In the medium period, it has less impact, and it diminishes in the long run. The study implies that investors should act cautiously near the budget declaration period. (Gautami, 2017) reports the demonetization call by the central government and its impact on the Nifty index fund. The researcher compares the fund performance with the benchmark using Mean, Standard deviation, Beta, and t-test. The researcher concludes that there is a significant difference in the Nifty index fund during the pre and post-demonetization period. (Divya. & Sophia, 2017) studies the impact of demonetization on the stock price of the top ten software companies in India for three months. Event methodology and time-series technique are used to capture the market behaviour and movement for market index and share price. The researcher comments that demonetization is a prime event because the whole economy is disrupted. The study shows that the market was very volatile in the initial days of demonetization. Then after it started growing, the growth did not extend to all the companies under study. (Sharma & Sain, 2017) explains the impact of GST on Indian stock exchanges. The researcher studies the selected stock. The researcher reflects the stock price before and after the event. The study reflects that microfinance, ascent finance, and lone finance have negative returns after the GST, demonetization, and waving of agricultural loans. Researchers proposed that GST implementation is a half-hearted attempt by the central government to rationalize the indirect tax structure. (Raja. & Sudhahar, 2010) conducted an empirical test of Indian stock market efficiency in respect of bonus announcements by IT companies. The test run by the researchers showed that security prices have a positive reaction to the announcement of bonus issues. It can be concluded that the Indian IT sector is efficient but not perfectly efficient in the announcement of a bonus issue of shares. (Darmayanti, 2015) explained whether there is any direct effect of return on equity, earning per share, and systematic risk on the stock price. The study suggests that Return on Equity and earnings per share have a dominant influence on the stock price. A systematic risk t-test shows there is significantly no effect on the company's stock price of food and beverage as the result of a systematic risk significance of 0.757. Values of r partial profitability for Systematic Risk of -0.046, which shows there is a negative relationship between Systematic Risk of the selected stock price by 4.6%.

ISSN: 2247-6172
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2. Research Methodology

The study is carried out by taking into study the following indices of NSE; Nifty50 is indices used as the benchmark for products traded on NSE 50 stocks, are taken into the study for calculating the index. Four sectoral indices and two thematic indices are taken into consideration for the study. The indices are Nifty Auto which constitutes 15 companies related to the manufacturing of cars, motorcycles, heavy vehicles, and tires. Nifty Bank consists of 12 banking companies engaged in the banking business, Nifty Commodities consists of 30 companies engaged in producing durable products, Nifty FMCG constitutes of 15 companies associated with producing fast-moving commercial goods, Nifty Pharma consists of 10 companies associated with manufacturing and marketing medicines and allied products and Energy constitutes of 9 companies related with production and distribution of petroleum and gas products. The study is carried out keeping the indices of different sectors like banking, auto, consumer durables, pharmaceuticals, and Energy; a total of 91 companies are there in the selected six sectoral indices.
Covid19 was declared a pandemic on 11th March, 2020 by the World Health Organisation. So the declaration day will be day 0, the event window (-20,+20) pre-event period is -20 days, and +20 days post-event of the trading days are considered for the study. The estimation period is 150 days 170-20=150 trading days, as there is no fixed rule for determining the estimation period. The general rule is 120 to 200 days. So it is assumed that 150 days estimation period will give an unbiased and true picture, a total of 191 days is studied. The data set is from 3rd July, 2019 to 13th April, 2020.

2.1 Objectives of the Study

- To study the impact of the Covid19 pandemic declaration on the selected stock indices of NSE.
- To analyze the pre and post-period fluctuations on the selected index of NSE.
- To study the correlation of the pre-event period and post-event period of the selected indices.

2.2 Hypothesis of the Study

1. **H_0:** There is no significant difference between AAR before and after the declaration of a pandemic.
2. **H_0**: There is no significant difference between CAAR of pre and post-event periods.

2.3 Tools of Analysis

A. Event Study Methodology
In studying economic events like budget announcements, elections, pandemics, and interest rate fluctuations, a market crash is of great interest to researchers in India as well as across the globe. For this kind of research, event study methodology is widely used. For carrying out event study methodology, the following is applicable
Daily Return is calculated using the logarithm method

$$\mathbf{R}t = \log\frac{Pt}{Pt-1} \quad (1)$$

Where,
R*t* = Market return of the period *t*
P*t* = Closing price of Index at day *t*
P*t-1* = Closing price of index at day *t-1*
Log = Natural Log
Daily expected return is estimated using Market Model for each index as follows

$$\mathbf{E(R}it\mathbf{) = \alpha + \beta\ (rm)} \quad (2)$$

Where,
E(R*it*) = Expected return on index *i* on day *t*
α = Alpha Value
β = Beta Value

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rm = return on the market on day *t*

To analyze the market reaction to the announcement of abnormal return it is calculated on the day of the announcement

$$\mathbf{AR}it = \mathbf{R}it - \mathbf{E}(\mathbf{R}it) \quad (3)$$

Where,
AR*it* = abnormal rate on index *i* on day *t*
R*it* = return on share *i* on day *t*

The abnormal rate is the percentage change in index value below and above what would normally expect to occur. To make the study more informative, the average abnormal return has been taken for all the observations.

$$\mathbf{AAR}t = \frac{1}{N} = \sum_{i=1}^{N} \mathbf{AR}it \quad (4)$$

Where,
AAR*t* = Average Abnormal Return at day *t*
AT*t* = Abnormal return for index *i* at day *t*
N= Number of events in the sample

In order to draw conclusions and overall inferences for market fluctuations to the event, the Cumulative Abnormal Return rate is also analyzed for the 150 days event window

$$\mathbf{CAAR}t = \sum_{i}^{K} \mathbf{AAR}t \quad (5)$$

Where,
CAAR*t* = Cumulative Abnormal Return on day *t*
$\sum_{i}^{K}$ AAR*t* = Sum of Average Abnormal return on day t- 20 days to t+ 20 days

The statistical significance of AAR*t* is measured through student t- statistics as below

$$t(\mathbf{AAR}) = \frac{AAR}{\sigma/\sqrt{N}} \quad (6)$$

Where,
t(AAR) = Average Abnormal return on day *t*
$\sigma/\sqrt{N}$ = Standard Error
N= Number of sample index

B. Correlation of Coefficient

For calculating the correlation in this study, Pearson's Correlation is used, which is also known as Pearson's R. It is most commonly used in linear regression. To study the correlation of various indices, the equation given below is used.

$$\mathbf{r} = \frac{N \sum XY - (\sum X)(\sum X)}{\sqrt{[N\sum X2 - (\sum X)2]\,[N\sum Y2 - (\sum Y)2]}} \quad (7)$$

Where,
N = number of paired score
∑XY = Number of product paired score
∑ X = Sum of X score
∑ Y = Sum of Y score
$\sum X^2$ = Sum of Squared X score
$\sum Y^2$ = Sum of Squared Y score

C. Normality Test

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It is used to check whether the data is normally distributed or not so that it can be determined whether parametric or non-parametric tests can be used. In the study, Kolmogorov-Smirnov and Shapiro-Wilk are used to check the normality of the data. The data is said to be normally distributed if the significance value is more than 0.05 at 95 % confidence level. In this study, the significance value of calculated indices is less than 0.05; thus it signifies that data is not normally distributed. Hence parametric test cannot be used to test the hypothesis of the study.

D. Wilcoxon Signed Ranked Test

If the data set is not normally distributed then for a single sample or paired sample of the independent variable, Wilcoxon Signed Ranked Test is used for testing the hypothesis.

$$ET = \frac{W - n(n+1)/4}{\sqrt{n(n+1)(2n+1)/24}} \quad \textbf{(8)}$$

Where,

n= number of observation

w= min (W^-, W^+)

3. Results and Discussion

Table No- 1: Showing AARs, CAARs and t-AARs during Pre and Post Event Period

Days	AAR %	CAAR %	t-statistics	Days	AAR %	CAAR %	t-statistics
-20	-0.006455	-0.006455	-1.81151	1	-0.002034	-0.006580	-0.57084
-19	-0.000319	-0.006773	-0.08942	2	-0.003810	-0.010389	-1.06916
-18	-0.004034	-0.010808	-1.13219	3	0.019927	0.009538	5.59256**
-17	0.001015	-0.009793	0.284825	4	0.017248	0.026786	4.840471**
-16	-0.003360	-0.013153	-0.943	5	0.013285	0.040071	3.72841**
-15	-0.004132	-0.017284	-1.15951	6	-0.007776	0.032295	-2.18238**
-14	0.000263	-0.017021	0.073839	7	-0.004264	0.028031	-1.19655
-13	0.001943	-0.015078	0.545286	8	0.018361	0.046392	5.153095**
-12	0.002413	-0.012666	0.677095	9	-0.007485	0.038907	-2.10066**
-11	-0.003316	-0.015982	-0.93064	10	-0.023911	0.014997	-6.71051**
-10	-0.005077	-0.021059	-1.42493	11	-0.012135	0.002861	-3.40573**
-9	-0.002143	-0.023202	-0.60139	12	-0.001788	0.001073	-0.50191
-8	0.001333	-0.021868	0.374223	13	0.022269	0.023342	6.249756**
-7	0.004548	-0.017320	1.276427	14	0.003788	0.027130	1.063022
-6	-0.003777	-0.021097	-1.05993	15	0.011663	0.038792	3.273099**
-5	0.010820	-0.010277	3.036704**	16	0.016100	0.054893	4.518543**
-4	0.001942	-0.008335	0.544947	17	-0.001354	0.053539	-0.37997
-3	0.000290	-0.008045	0.081508	18	0.013308	0.066847	3.734917**
-2	0.003706	-0.004339	1.04003	19	0.000913	0.067761	0.256319
-1	0.007251	0.002913	2.035033**	20	0.007346	0.075106	2.061601**
0	**-0.007458**	**-0.004546**	**-2.09309****				
** Significant at 5% level.							

Source: *Author Calculation.*

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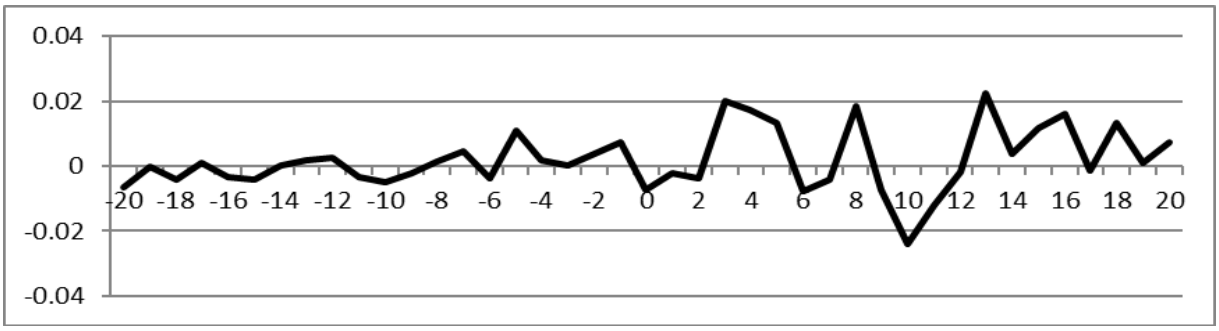
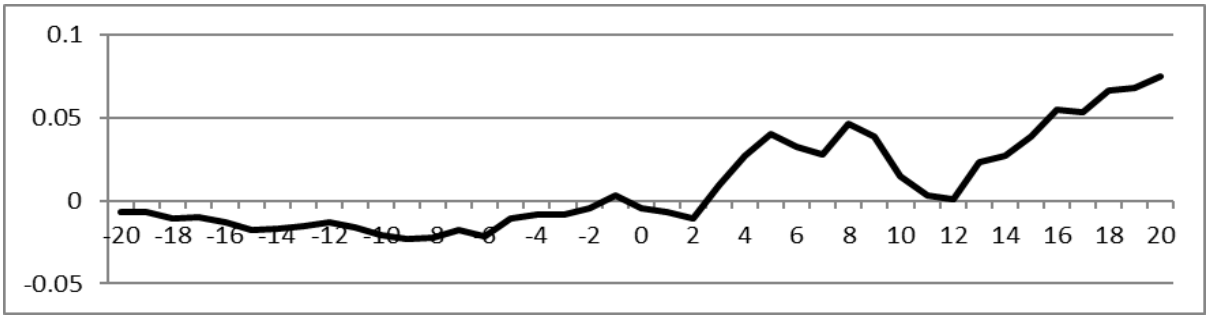
Table No-1 shows the event day generated an AAR of -0.007458 percent, which was significant at a 5 percent level. The AARs before the pandemic declaration period from -20 days to -1 days are positive for 11 days out of 20 days and are negative for the other 9 days. The AAR is significant at a 5 percent level on -1 day and -5 days, having a positive return of AAR 0.007251 and 0.010820. On the event day of the declaration of Corona as a pandemic, the AAR of the selected company indices consisted of a negative return -0.007458 at a 5 percent level of significance.
The post-event day AARs after the pandemic declaration period from +1 day to + 20 days at 5 percent significance level is a positive return for 11 days out of 20 days and negative for the other 9 days. The AAR is significant at 5 percent having positive return on the following days +3 at 0.019927, +4 at 0.017248, +5 at 0.013285, +8 at 0.018361, +13 at 0.022269, +15 at 0.011663, +16 at 0.016100, +18 at 0.013308 and +20 at 2.061601. On +6 day it has negative return -0.007776, +9 at -0.007485, +10 at -0.023911 and on day +11 at -0.012135.



Source: *Author Calculation.* Chart No- 1: Showing the AAR of Pandemic Declaration

Chart No-1, during the event window to 41 days, the AAR was positive for 22 days while it was negative for 19 days during the 41 days event window. After the event day, 13 days were significant to earn an abnormal return due to the event. Statistical significance shows that among the indices studied, some variations have occurred.
Chart No-2, the CAAR was negative for 22 days out of 41 days' event window and positive for 19 days. After the event beyond +3 days of the event, CAAR is positive for all the subsequent days till +20 days. The indices adjustment has taken quickly just after 3 days of the event.



Source: *Author Calculation.* Chart No- 2: Showing CAAR of Pandemic Declaration

Table No-2: Wilcoxon Signed Ranks Test for pre and post-event of AAR and CAAR

			N	Mean Rank	Sum of Ranks
Pre Event AAR Post Event AAR		Negative Ranks	11	12.27	135.00
		Positive Ranks	9	8.33	75.00
		Ties	0		

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		Total	20		
Pre Event CAAR Post Event CAAR		Negative Ranks	18	11.50	207.00
		Positive Ranks	2	1.50	3.00
		Ties	0		
		Total	20		

Source: *Author Calculation.*

Table No-3: Test Statistics

	Pre Event AAR Post Event AAR	Pre Event CAAR Post Event CAAR
Z	-1.120	-3.808
Asymp. Sig. (2-tailed)	.263	.000

Source: *Author Calculation.*

Table no-2 & 3 shows the results of the Wilcoxon Signed-Rank test and test statistics. This test is used because the data fails in the normality test, so parametric tests cannot be used to check the significance of the hypothesis. As data of each index is one sample having a matched pair of the same data set divided into pre and post-event. In this situation, the Wilcoxon signed test is suitable. It is used in the study to check whether there is a statistically significant difference between the AAR and CAAR of 20 days pre-event and 20 days after the event. The results of AAR were not significant, p=.263, P>0.05. Thus the Null Hypothesis is Accepted; there is no impact of pre and post-event in the AAR of the selected indices. The results of CAAR were significant, p=.000 < 0.05. Thus the Alternative hypothesis is accepted there is a difference in Pre and post-event of CAAR. The mean rank of pre-event AAR is 12.27, and the post-event is 8.33, whereas the CAAR mean rank of pre-event is 11.50 and the post-event is 1.50. The research retains the first Null hypothesis, **H0:** There is no significant difference between AAR before and after the declaration of the event. While the research rejects the second null hypothesis, **H0**: There is no significant difference between the CAAR of pre and post-event periods.

Table No-4: Wilcoxon Signed Ranks Test of Sectoral and Thematic Indices

Sector		N	Mean Rank	Sum of Ranks
Nifty Auto Pre Event Nifty Auto Post Event	Negative Ranks	10	10.70	107.00
	Positive Ranks	10	10.30	103.00
	Ties	0		
	Total	20		
Nifty Bank Pre Event Nifty Bank Post Event	Negative Ranks	8	10.88	87.00
	Positive Ranks	12	10.25	123.00
	Ties	0		
	Total	20		
Nifty Commodities Pre Event Nifty Commodities Post Event	Negative Ranks	12	10.42	125.00
	Positive Ranks	8	10.63	85.00
	Ties	0		
	Total	20		
Nifty FMCG Pre Event Nifty FMCG Post Event	Negative Ranks	11	12.73	140.00
	Positive Ranks	9	7.78	70.00
	Ties	0		
	Total	20		

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Nifty Pharma Pre Event Nifty Pharma Post Event	Negative Ranks	16	11.00	176.00
	Positive Ranks	4	8.50	34.00
	Ties	0		
	Total	20		
Nifty Energy Pre Event Nifty Energy Post Event	Negative Ranks	13	12.15	158.00
	Positive Ranks	7	7.43	52.00
	Ties	0		
	Total	20		

Source: *Author Calculation.*

Table No-5: Test Statistics

	Nifty Auto Pre & Post Event	Nifty Bank Pre & Post Event	Nifty Commodities Pre & Post Event	Nifty FMCG Pre & Post Event	Nifty Pharma Pre & Post Event	Nifty Energy Pre & Post Event
Z	-.075	-.672	-.747	-1.307	-2.651	-1.979
Asymp. Sig. (2-tailed)	.940	.502	.455	.191	.008	.048

Source: *Author Calculation.*

3. H0: There is no significant difference between AR before and after the declaration of a pandemic
Table No- 4 & 5 show the Wilcoxon Signed Ranks Test of Sectoral and Thematic Indices. In the pre and post-event of Nifty Auto p=.940, P>0.05, Nifty Bank p=.502, P>0.05, Nifty Commodities p=.455, P>0.05, Nifty FMCG p=.191, P>0.05 the p-value is greater than the z value, thus it implies that there is no significant impact at 95% confidence interval. Thus it implies that the null hypothesis stands accepted for the mentioned indices. The mean ranks and the sums of ranks are depicted in table no-4, whereas table no-5 it shows the test results. The Nifty Pharma p=.008<0.05 and Nifty Energy p= .048< 0.05 have significant values; thus, the Alternative hypothesis is accepted that there is a difference in Pre and post-event of AR.

Table No-6: Showing Correlation of various indices of NSE

	Nifty 50		Nifty Auto		Nifty Bank		Nifty Commodities		Nifty FMCG		Nifty Pharma		Nifty Energy	
	P	P1	P	P1	P	P1	P	P1	P	P1	P	P1	P	P1
Nifty 50	1	1	.958	.869	.981	.896	.990	.948	.989	.429	.759	.384	.990	.752
Nifty Auto	.958	.869	1	1	.917	.932	.980	.887	.943	.053	.816	.162	.968	.475
Nifty Bank	.981	.896	.917	.932	1	1	.966	.845	.970	.011	.646	-.007	.967	.406
Nifty Commodities	.990	.948	.980	.887	.966	.845	1	1	.974	.974	.800	.474	.995	.788
Nifty FMCG	.989	.429	.943	.053	.970	.011	.974	.447	1	1	.755	.755	.976	.878
Nifty Pharma	.759	.384	.816	.162	.646	-.007	.800	.474	.755	.897	1	1	.976	.853
Nifty Energy	.990	.752	.968	.475	.967	.406	.995	.788	.976	.878	.976	.853	1	1

Source: *Author Calculation.* (P = Pre-Event, P1 = Post-Event)

Table No-6, the correlation of different sectoral and thematic indices of the National stock exchange shows how one index is related to other indices. The table shows the correlation between pre and post-event of -20 and +20 days' event window. The pre-event correlation is shown in the P column and the post-event correlation is shown in the P1 column. With nifty 50 all the other indexes are positively correlated during the pre and post-event period. In the post-event period, the correlation is not similar to the pre-event period

ISSN: 2247-6172
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of Nifty FMCG, Nifty Pharma, and Nifty Energy. Nifty Bank is negatively correlated with nifty pharma with -.007 in the P1 while it was .646 in P. Nifty FMCG is also less least correlated with the nifty bank in P1. From table 4, it can be witnessed that many of the indices in the post-event period do not have a strong correlation compared to the pre-event period.

4. Conclusions

The results show that the event does not have a significant impact on the AAR of the selected different sectoral and thematic indices. However, it has an impact on the CAAR, and the result was found using the t-test for the event window of -20 +20 days. The study result shows that investors have not earned abnormal returns in the sample indices. In the individual sectoral and thematic index, Nifty Pharma and Nifty Energy have a difference, thus implying that in two indexes have earned abnormal returns. Overall the market is efficient enough to absorb information and react accordingly. In a time frame of 20 trading day's market adjusts itself. Further study will be required for a very short, medium, and long-term period to see the impact on all three stages. For a longer duration, the buy and sell carried out by the broker and investor make the market in check. The correlation among the index is positive among all except between the bank and Pharma index, which is negatively correlated. There is also some significant impact on the correlated values of the pre and post-event period. This study can be extended to the individual company to know if investors can earn abnormal returns.

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Manuscript received: 19.05.2022

Manuscript received in revised form: 08.08.2022

Manuscript accepted: 01.09.2022

ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2 / 2022), pp. 174 - 191
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Triple Helix: the concept of synergy for SMEs to increase business performance

Anak Agung Dwi Widyani, I Nengah Suardhika[+], Ni Putu Yeni Astiti, Ni Wayan Rustiarini

Universitas Mahasaraswati Denpasar, Indonesia

Abstract: *The SME sector provides an essential economic contribution to the development and welfare of society, namely the Gross Domestic Product (GRDP). However, despite contributing to the economy and GDP, SMEs face several obstacles, including financial constraints, limited marketing and available resources. Synergy from various parties is needed to overcome this economic and social phenomenon. The intended synergy is between intellectuals, the government, and the business. The synergy of the three actors is termed the triple helix. This study aims to analyze the effect of the triple helix consisting of intellectuals,government, and the business community on the innovation and ability of SMEs, the effect of innovation on SMEs' ability and business performance,and the influence of ability on the business performance of SMEs. The sample was SMEs throughout Bali who are members of the Bali Bangkit exhibition,totaling 45 SMEs with criteria determined by the Bali Industry and Trade Department. Data analysis was carried out using the SmartPLS 3.0 program. The results show that SME innovation is influenced by academic support (intellectuals). The business community and government strongly support the ability of SMEs. Innovations made by SMEs can improve business capabilities. Likewise, SME business performance is determined by its innovation and capabilities. SMEs' business performance improvement based on innovations in business activities is determined more by academic support. The achievement of business results from SMEs based on their business capabilities tends to be determined by government support. The synergy increases the ability of SMEs to improve performance.*

Keywords: triple helix, intellectuals, government, innovation, ability, business performance

JEL Codes: L25, L26, G38

1. Introduction

The Small and Medium Industry (SME) sector makes an essential economic contribution to the development and welfare of the community. Small and Medium Industries strongly influence prosperity, growth, and economic development (Iromaka, 2006). Small and Medium Industries are also a primary means of community socio-economic development and impact poverty alleviation (Opafunso & Adepoju, 2014). Okhankhuele's (2017) research results reveal a positive and significant effect on Gross Domestic Product (GDP). Likewise, SMEs in Germany are the backbone of the economy in that country. Several research results show that the Small and Medium Industry (SME) sector is a sector that makes a significant contribution to the Gross Regional Domestic Product (GRDP). It is proven to resist economic problems, so SMEs are used as the leading sector of national economic development.

Despite contributing to the economy and GRDP, SMEs face several obstacles, including financial constraints and limited marketing and resources (Taiwo et al., 2012). SMEs face two challenges in facing the current global business competition. First, they must answer business opportunities that are very open due to globalization. Second, they must build and maintain a business network to advance their company. If not

[+] **Corresponding author**: *Email adress:* suardhikanengah@unmas.ac.id, Tel.: +6281936225999, address: Kamboja Street No. 11A Denpasar

ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2 / 2022), pp. 174 - 191
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

addressed immediately, these constraints and challenges will hinder their activities, performance, and sustainability (Karaev et al., 2007; Sapta et al., 2021). SMEs also experience these constraints and challenges in Bali. The Covid-19 pandemic that has hit the world, including Bali, has significantly impacted the Balinese economy (Amah et al., 2021; Aristana et al., 2022), including the SME sector. Therefore, various parties need synergy to overcome this economic and social phenomenon, including intellectuals, government, and business. The synergy of the three actors is termed the Triple Helix.

The Triple Helix concept is a concept in a transformational process that highlights the synergy between intellectuals, government, and business (Etzkowitz, 2014; Etzkowitz & Leydesdorff, 1995; Etzkowitz & Viale, 2010). Higher education centers on technology transfer and provides human resources and knowledge (Etzkowitz & Dzisah, 2008). Academic support must come from universities by researching skilled and knowledgeable personnel. The business community facilitates the application of knowledge, and human resource needs to help companies meet their goals (Sapta et al., 2021). Government plays an essential role in assisting by providing full support for policymaking and promoting and providing infrastructure.

Triple Helix is a synergy of intellectuals, government, and business essential for increasing innovation (Kim et al., 2012). Small and Medium Industries must always strive to improve quality and meet consumer needs and desires (Suardhika et al., 2018). Innovation is one way that is very important because of rapid technological changes, shorter product life cycles, and the increasing desire of consumers to obtain quality products. According to Widyani's (2019) research, innovation can improve the ability and performance of the company. However, other research results show that innovation as a risky and high-cost process has a negative effect on firm performance (Simpson et al., 2006). Similarly, innovative services and processes negatively impact the company (Damanpour, 2014). Limited resources are one of the factors that cause innovation to have a negative impact and harm the company. This condition requires SMEs to synergize with intellectuals, government, and businesses to improve business performance.

This study aims to analyze the effect of the triple helix consisting of intellectuals, government, and the business community on the innovation and ability of SMEs, the effect of innovation on SMEs' ability and business performance, and the influence of ability on ability on the business performance of SMEs.

2. Literature Review

2.1. Triple Helix

The progress of SMEs requires the support and synergy of the triple Helix: intellectuals, the government, and business. Local governments assist by providing full support in policymaking, promoting, and providing infrastructure. The government is vital for transferring knowledge and assistance to improve the creative economy. This indicates an increase in policies encouraging interaction between universities and businesses (Choi et al., 2015).

Intellectual support must come from universities that conduct research and knowledge development (Etzkowitz & Dzisah, 2008). Scholars, in this case academics, play a role in applying and sharing knowledge related to the business world. As a forum for academics, higher education provides human resources and knowledge to support socio-economic development. The activities of business actors play a role in producing goods and services that the community or consumers utilize. The government has the authority related to the regulations that regulate these business activities. The synergy is expected to be able to increase innovation from SME actors. Innovation in SMEs is manifested in product modification and is highly dependent on creativity and innovation (Afriyie et al., 2019; Campo & Trio, 2021). High innovation power in management will always create differentiating attributes in products, especially in creative industries. Consequently, innovation management has become a prominent strategy for overcoming competition increasingly. Innovation

ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2 / 2022), pp. 174 - 191
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needs to be thoughtfully and carefully explored and strengthened. This research will show the following innovation indicators: product innovation, process innovation, and organizational innovation (Exposito & Sanchis-llopis, 2018; Expósito & Sanchis-Llopis, 2019).

Although the SME sector continues to grow, its ability to do business with large companies is still constrained. This phenomenon has proven to challenge SMEs in upgrading into larger-scale companies. Previous research has shown that when SMEs interact with large companies, there are advantages such as better organizational structures, management practices, and operations (Hallberg, 2000). These changes allow small companies to improve their technology, access finance, improve their governance,and, most importantly, become financially sound. Therefore, revenue streams grow and are more consistent, thus enabling small businesses to create more jobs. Furthermore, scaling to a larger company opens the door to more accessible credit and other business opportunities. Other advantages include abundant newknowledge, innovation, and business models (Benami & Carter, 2021).

Financial health is one of the main weaknesses of SMEs. Small and Medium Industries face the challenge of accessing external financial resources, limiting their capacity to develop new products, increase existing production, and capture emerging business opportunities. Effective SME management is critical in any business management (Koçyiğit & Akkaya, 2020).

2.2. Innovation

Innovation occupies an essential place in increasing product sales success and company performance. One of the performance achievements and competitive advantages is determined by innovation (Ferreira et al., 2020). Innovation is an essential factor in improving business performance. Organizations supported by innovative capabilities can respond to environmental challenges more quickly to increase organizational efficiency (Jiménez - Jiménez & Sanz - Valle, 2005). Organizational innovation can bring new changes and success and improve business performance (Ali et al., 2016; Azar & Ciabuschi, 2017; Jiménez - Jiménez & Sanz - Valle, 2005). Innovation also is the successful implementation of creative ideas based on resources, management practices, and knowledge in the organizational context (Wang et al., 2014). Innovation in organizations will improve company performance. Innovation is realized by universities, businesses, and the government (Widyani et al., 2019). This result is supported by previous research that innovation results from an interactive process involving the three actors (Brem & Radziwon, 2017; Cavallini et al., 2019).

2.3. Business Ability

Although the SME sector continues to grow, its ability to do business with large companies is still constrained. This phenomenon has proven to challenge SMEs in upgrading into larger-scale companies. Previous research has shown that when small firms interact with large firms, there are advantages such as better organizational structures, management practices, and operations (Hallberg, 2000). These changes allow small companies to improve their technology, access finance, improve their governance,and, most importantly, become financially sound. Therefore, revenue streams grow and are more consistent, thus enabling small businesses to create more jobs (Suardhika et al., 2021).

Furthermore, scaling to a larger company opens the door to more accessible credit and other business opportunities. Other advantages include abundant new knowledge, innovation, and business models. Financial health is one of the main weaknesses of SMEs (Suardhika, 2021). Small and Medium Industries face the challengeof accessing external financial resources, limiting their capacity to develop new products, increase existing production, and capture emerging business opportunities (Parker et al., 2009). The synergy between the government strongly supports effective SME management capabilities as a regulator and universities as resource providers (Kolehmainen et al., 2016). Increasing the ability of SMEs with synergies among the triple

ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2 / 2022), pp. 174 - 191
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helix actors will direct the business and avoid strategic failures. Therefore, the capabilities of SMEs consist of financial performance, capacity building, access to finance, and corporate governance.

2.4. Business Performance

Small and Medium Enterprises (SMEs) now represent the strength of every economy and play a key role in promoting the growth and development of the country. Usually, the ability of SMEs is evaluated based on their performance. Performance measurement has a significant influence on human behavior that enables organizational improvement. Performance is a term for all concepts considering their success and activities. Financial performance refers to sales value, growth, and gross profit or profitability (Hanifah et al., 2019), while operational performance is defined as productivity. The performance of SMEs in this study consists of financial and operational performance (Exposito & Sanchis-llopis, 2018).

2.5. Research Hypotheses

H1: Intellectuals have a significant effect on innovation

H2: Intellectuals have a significant effect on a business's ability

H3: Business actors have a significant effect on innovation

H4: Business actors have a significant effect on a business's ability

H5: The government has a significant influence on innovation

H6: The government has a significant effect on a business's ability

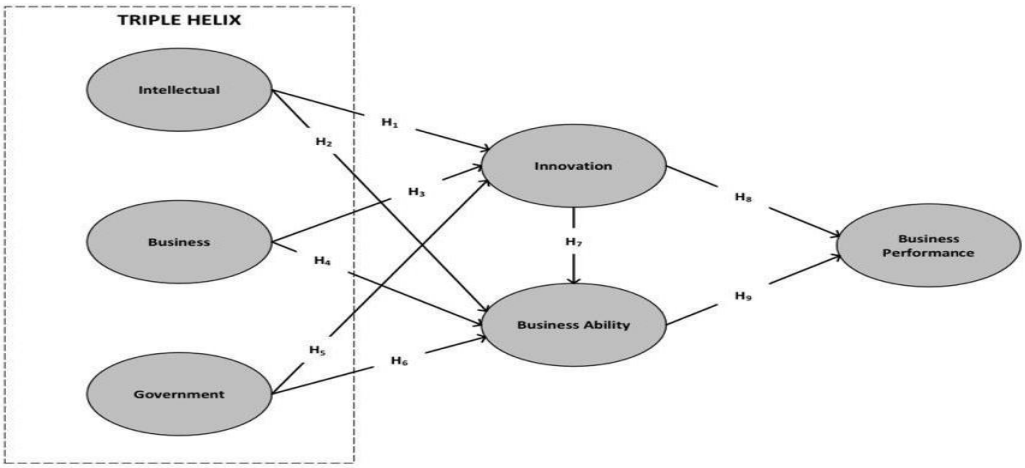
H7: Innovation has a significant effect on business capabilities

H8: Innovation has a significant effect on business performance

H9: The ability of SMEs has a significant effect on business performance

Based on the theoretical study and the results of previous research, a conceptual research framework was developed, as shown in Figure 1.

Figure 1: Research Concept FrameworkResearch Hypothesis



ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2 / 2022), pp. 174 - 191
URL: http://www.reaser.eu
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3. Research Method

3.1. Population and research sample

The research population is the SME in Bali who passed the selection with several criteria determined by the Disperindag Bali Province. As for the SMEs that meet the criteria of the research sample, there are as many as 45 companies. The criteria set by the Industry and Trade Department of Bali Province for the Bali Bangkit SME exhibition participants, which will then become the research sample, are:

1. Using local raw materials and labor
2. Environmentally friendly industry
3. Motifs and designs reflect the local culture.

3.2. Research variable

The variables consisted of three exogenous, mediating, and endogenous variables.

1) Exogenous variable, namely Triple Helic (X), which consists of
   a. Intellectual (X1), measured by three indicators, namely idea discovery (X1.1),mentoring (X1.2), networking (X1.3)
   b. Business (X2), measured by three indicators, namely ethics (X2.1), IPR protection (X2.2), ownership (X2.3)
   c. Government X3), measured by three indicators, namely regulations (X3.1), laws (X3.2), policies (X.3.3)
2) Endogenous variables, namely
   a. Innovation (Y1) is measured by three indicators, namely process innovation (Y1.1), product innovation (Y1.2), and innovation implementation (Y1.3).
   b. The ability of SMEs (Y2) is measured by three indicators, namely capacity building (Y2.1), access to finance (Y2.2), and corporate governance (Y2.3).
   c. Business performance (Y3) in this study is measured by indicators of financial perspective (Y3.1), customer perspective (Y3.2), internal business process perspective (Y3.3), and learning and growth perspective (Y3.4).

3.3. Variable operational definition

The definitions of each variable used in this study are as follows:

1) Intellectual (X1) is a pattern of intelligent and clear thinking using knowledge. The indicators used include the following.
   a) The discovery of ideas (X1.1) is new ideas for improving the performance of SMEs.
   b) Mentoring (X1.2) is an activity to guide the improvement of the performance of SMEs.
   c) Network (X1.3) is a social structure formed to strengthen SMEs.
2) Business Community (X2) is an action taken to gain profit and value or added value.
   a) Ethics (X2.1) is a moral value that regulates SMEs' business operations.
   b) IPR protection (X2.2) is a right obtained by SMEs related to the security guarantee of the products they produce.
   c) Ownership (X2.3) is socially supported power to control something owned.
3) Government (X3),
   a) Regulation (X3.1) is an order, guideline, rule, or provision to regulate SMEs.
   b) Law (X3.2), provisions, and regulations for SMEs stipulated by the authorities.
   c) Policy (X3.3) is a series of concepts that serve as guidelines and the basis for implementing SME activities.
4) Innovation (Y1) is a way to make changes or new updates to achieve organizational and company goals. The indicators include the following.

ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
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a) Process Innovation (Y1.1), namely periodic and continuous improvement in terms of processes
b) Product Innovation (Y1.2): The business always tries to produce new products.
c) Organizational innovation (Y1.3) is a management process that supports and strives towards cultural change to become skilled, consistent, and responsible in using innovation.

5) Business capability (Y2) is an SME's capacity to achieve specific goals. The indicators following.
   a) Capacity building (Y2.1) is an effort SMEs make to increase production capacity.
   b) Access to finance (Y2.2) is an effort for SMEs to gain trust related to capital and theability to repay.
   c) Corporate governance (Y2.3) is an effort for SMEs to maintain a coordinated management system.
6) Business performance (Y3) is a description of the work of an organization within acertain period. Business performance measurement indicators consist of:
   a) The financial perspective (Y3.1) is the company's ability to generate profits.
   b) Customer perspective (Y3.2) is continuous customer growthwithin a certain period.
   c) Process perspective (Y3.3), namely the continuous improvement of the productionprocess.
   d) Learning and growth perspective (Y3.4), training activities to improve work skills.

3.4. Data analysis

The data were analyzed using the partial least squares (PLS) analysis technique, a statistical analysis method based on a structural equation model (Götz et al., 2010). Structural equation modelling (SEM) with PLS can be used to confirm that the observed construct variables are theoretically appropriate and to estimate the causal relationship of variables in the structural model (Hair et al., 2013). Furthermore, data analysis was carried out using Smart-PLS software, it is easy to apply and famous for structural equation modelling.

4. Results and Discussions

4.1 Research Instrument Test

1. Validity Test

   It tests the validity using the correlation method between the scores of the questions with the total score (indicator) at the alpha level of 0.05. The statement item is valid if it has a positive correlation and is more significant than 0.30 or the value of the correlation coefficient (r) > 0.30. Based on the results of the validity analysis with the SPSS program, showing that all the instrument validity test meet the valid criteria with the product-moment correlation, which is above the product-moment r value (0.3).

2. Reliability Test

   This test determines the extent to which the measurement results can be trusted or whether the respondent can disclose the existing data on the research variables. Calculation of reliability using the Cronbach Alpha analysis technique is considered reliable if greater than 0.6. In this case, a reliability test will be carried out for several variables used in this study, including intellectual variables, business, government, innovation, business ability, business performance, and SME performance.

4.2 Descriptive Analysis

The data analyzed was based on a questionnaire distributed and collected online from all targeted respondents, as many as 47 units for 21 days (August - September 2021). The examination results showed that all the questionnaires had been filled out and included in the analysis. A descriptive analysis will first be carried out in the theory testing stage. This analysis provides an overview of the respondents' profiles (gender, age, education, business commodities, business location, length of business, and the number of workers). Furthermore, an analysis was carried outto describe the variables studied.

Descriptive analysis of the profiles of research respondents was carried out by giving numbers, both in number (frequency) and percentage. Meanwhile, the description of the research variables determines the

ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
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respondents' perceptions of the statements about the variables studied in the research instrument. The mean used in this analysis is to determine the respondents' responses to the statements in the research instrument and perceptions of the variables studied.

Table 1: Respondent Profile

No.	Descriptions	Quantity	Percentage (%)
1.	**Gender:**		
	• Male	23	48.9
	• Female	24	51.1
2.	**Age:**		
	• < 25 years	10	21.3
	• 25 – 34 years	4	8.5
	• 35 – 44 years	14	29.8
	• 45 – 55 years	16	34
	• > 55 years	3	6.4
3.	**Education:**		
	• High school or equivalent	20	42.6
	• Diploma	4	8.5
	• Bachelor	19	40.4
	• Postgraduate	4	8.5
4.	**Business commodities:**		
	• Fabric Craft/Convection	20	17.7
	• Woodcraft	9	23.7
	• Components/Finished House	5	14.9
	• Gold/Silver Craft	2	7.9
	• Iron Craft	6	13.5
	• Stone Craft	3	8.4
	• Herbal Products	2	7.9
5.	**Location:**		
	• Denpasar City	8	17.0
	• Badung	13	27.7
	• Tabanan	1	2.1
	• Gianyar	6	12.8
	• Klungkung	6	12.8
	• Karangasem	2	4.3
	• Buleleng	6	12.8
	• Jembrana	5	10.6
6.	**Business length:**		
	• < 3 years	7	14.9
	• 3 – 7 years	9	19.1
	• 8 – 12 years	10	21.3
	• 13 – 17 years	3	6.4
	• > 17 years	18	38.3
7.	**Number of Workers:**		
	• < 5 people	18	8.8
	• 5 – 14 people	18	10.7
	• 15 – 24 people	4	28.4
	• 25 – 34 people	3	28.8
		4	23.3

ISSN: 2247 - 6172
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- > 34 people

(Source: Analysis results)

Table 1 above shows that the profile of respondents based on gender indicates that the owners and managers of SMEs are primarily women, 51.1 percent, while men contribute 48.9 percent. This information indicates that the gait and interest of women in pursuing the world of entrepreneurship are increasingly prominent. Therefore, women's future role will be increasingly considered as entrepreneurs in small and medium enterprises, especially in the province of Bali.

The respondents' profile based on age shows that most SME managers are 45- 55 years old, with a distribution of 34 percent. Next, followed by the age of respondents 35-44 years (29.8 percent), aged under 25 years (21.3 percent), 25 -34 years (21.3 percent), and over 55 years (6.4 percent). Information from the distribution of respondents by age indicates that the dominant SME managers in Bali are productive and mature (aged 35-55 years). The education possessed by SME managers reflects their knowledge and skills in running a business. The education level of SME managers (Table 1) is primarily high school or equivalent, which is 42.6 percent, followed by 40.4 percent of those with bachelor's degrees. Meanwhile, those with diplomas and postgraduate degrees both contributed 8.5 percent. This information illustrates that the education owned by SME managers still tends to be limited. Thus, their abilities need to be improved through training and workshops. Their knowledge and skills in managing a business can continue to develop according to the demands of increasingly advanced and competitive business dynamics.

The business commodities' constancy is based on the high demand for these commodities in the market. Table 1 above shows that the fabric/convection industry dominates the commodities offered with a distribution of 42.6 percent and subsequent, followed by SMEs in woodcraft commodities (19.1 percent), iron crafts (12.8 percent), components/finished houses (10.6 percent), and stone crafts (6.4 percent). SMEs that produce gold/silver handicrafts and herbal products have a minor distribution of 4.3 percent. Strategic location in establishing a business plays a critical role in achieving business success. In addition to the availability of physical facilities and infrastructure, access and market information are crucial in determining a business's location. The Badung Regency area is the most strategic business location and is in demand by SMEs, with 27.7 percent. They were then followed by SMEs located in Denpasar City (17 percent), Gianyar Regency (12.8 percent), Klungkung Regency (12.8 percent), Buleleng Regency (12.8 percent), Jembrana Regency (10.6 percent), and at least in Tabanan Regency. (2.1 percent).

Business maturity is measured by the length of time the business recognizes and takes advantage of various opportunities and threats in its business environment. The profile of respondents based on the length of their business shows the dominance of SMEs. They have been operating for more than 17 years, 38.3 percent. Furthermore, SMEs are operating for 8 – 12 years (21.3 percent), for 3 – 7 years (19.1 percent), for under three years (14.9 percent), and for at least 13-17 years (6.4 percent). This condition reflects that most SMEs have matured in business activities because, during that time, business managers have understood their internal capabilities to perform manoeuvres as a form of responsiveness and adaptation to changes in the business environment.

Based on the large number of workers used in business operations, the dominant SMEs employing as many as 14 people and below, which is around 18 percent, and followed by SMEs which employ 15-24 people (8.5 percent), above 34 people (8.5 percent), and employs at least 25 - 34 people (6.4 percent). The overall information shows that most respondents are classified as small industries because most of the workforce is less than 20.

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The following descriptive analysis determines the distribution of respondents' responses to statements in the research instrument, especially the variables studied. The analysis has calculated the average based on the percentageof respondents' responses to the research instrument from the variables studied, namely support from academics (intellectuals), support from the business community (business), support from the government (government), innovation in activities business (innovation), the ability possessed in the business (business ability), the achievement of business results (business performance). The higher the average value obtained, the better the respondents' responses to the instruments of the variables studied. As for the results of the descriptive analysis, both the average and standard deviation for intellectuals, business, government, innovation, capability effort, and business performance is shown in Table 2.

Table 2: Descriptive Statistics

Variables	Values	
	Mean	Std. Deviation
Intellectual	**4.36**	**0.509**
Knowledge (Intellec1)	4.19	0.639
Use of Technology (Intellec2)	4.26	0.667
Companion (Intellec3)	4.49	0.547
Mediator (Intellec4)	4.51	0.560
Bisnis	**4.36**	**0.619**
Business cooperation (Buss1)	4.36	0.573
Production optimization (Buss2)	4.35	0.638
Marketing network (Buss3)	4.35	0.666
Production facilities and infrastructure (Buss4)	4.34	0.656
Government	**4.25**	**0.677**
Legality (Goverm1)	4.27	0.646
Certification (Goverm2)	4.25	0.685
Business capacity (Goverm3)	4.23	0.700
HR Development (Goverm4)	4.25	0.710
Grants/Business Assistance (Goverm5)	4.23	0.713
Innovation	**4.42**	**0.535**
Product innovation (Innov1)	4.50	0.605
Process innovation (Innov2)	4.26	0.695
Marketing innovation (Innov3)	4.60	0.524
Organizational innovation (Innov4)	4.31	0.708
Business Ability	**4.19**	**0.641**
Global capability (Ability1)	4.17	0.702
Management (Ability2)	4.20	0.681
Production (Ability3)	4.17	0.670
Sales and marketing (Ability4)	4.22	0.690
Information systems (Ability5)	4.16	0.660
Learning (Ability6)	4.21	0.657
Logistics (Ability7)	4.16	0.635
External relation (Ability8)	4.23	0.682
Business Performance	**4.19**	**0.579**
Financial performance (Perf1)	4.26	0.634
Customer performance (Perf2)	4.13	0.661
Internal business process performance (Perf3)	4.18	0.585
Learning and growth (Perf4)	4.23	0.670

(Source: Analysis results)

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Information obtained from the descriptive analysis of each variable studied (Table 2) shows that the owners/managers of SMEs believe in the participation of academics (intellectuals) to support business activities to achieve expected business achievements. This result follows the average value obtained on the intellectual variable close to five (4.36). Furthermore, they support academics as mediators with related parties, especially providing access to the government, related industries, and banking parties. They also agree with the support from the business community, with an average score of 4.36. The hope of the owners or managers of SMEs from the support of this business community is to conduct business cooperation, especially production cooperation and joint ventures. They also believe in the role of support from the government (4.25), especially on business legality. The government's support for business legality intended by SME owners/managers is the ease of obtaining business permits and business entities in the industry.

SME owners/managers continue to innovate in their business activities to maintain their existence in the market (4.42). They tend to do innovation in business activities in marketing activities, such as making practical promotional efforts, marketing products in various ways, and looking for opportunities in new markets. In addition, the information conveyed is that SMEs believe in the ability of their businesses to compete (4.19). Their business capabilities are more about establishing relationships with business partners, especially maintaining good (long-term) relationships with customers and suppliers). SME owners/managers believe they have achieved their business results (4.19). Thus, the results of their operations have tended to be on financial performance, particularly in sales growth, followed by profit growth and asset returns.

4.4 Inferential Analysis

In inferential analysis, Smart-PLS 3.0 software is used with the stages of analysis, namely evaluation of the outer model, evaluation of the inner model, and hypothesis testing. The evaluation of the outer model aims to prove the validity and reliability, including the suitability of the predictive model. Next, the inner model tests the hypothesis for the direct effect and examines the intervening variable for the indirect effect. The following will discuss theresults of the evaluation of the outer model to confirm the validity and constructs to verify the measurement model.

The evaluation of the outer model is carried out concerning the level of validity and reliability of the measurement model positively on a variable construct. Following the SEM argument, this evaluation can be approved by testing the validity of the convergence, the variance of the extracted mean (AVE), and the level of reliability (Cronbach's alpha and CR). In addition, the evaluation will also examine discriminants, predictive models, and model fit (Goodness of Fit).

According to the directions of Hair et al. (2014), convergent validity is accepted in the measurement model if the indicators in the construct meet the requirements. The outer loading must be above 0.50. The AVE value must be higher than 0.50, and the reliability value (Cronbach Alpha and CR) must be higher than 0.70. Based on this, itappears that the coefficients and figures shown in Table 3 have described and confirmedthe adequate level of validity and reliability of the variables studied.

Table 3: Outer Model Evaluation Results

Variables	Indicator	Outer Loading	AVE	√AVE	Cronbach Alpha	CR
Intellectual	Intellec1	0.778	0.600	0.775	0.773	0.856
	Intellec2	*0.883*				
	Intellec3	0.737				
	Intellec4	0.686				
Business	Buss1	0.583	0.646	0.804	0.856	0.809
	Buss2	0.858				
	Buss3	0.808				

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	Buss4	0.780				
	Buss5	*0.944*				
Government	Goverm1	0.865	0.752	0.867	0.918	0.938
	Goverm2	0.878				
	Goverm3	*0.882*				
	Goverm4	0.871				
	Goverm5	0.838				
Innovation	Innov1	0.836	0.597	0.773	0.784	0.854
	Innov2	0.775				
	Innov3	0.639				
	Innov4	0.825				
Business Ability	Ability1	0.813	0.574	0.758	0.890	0.913
	Ability2	0.805				
	Ability3	0.810				
	Ability4	*0.900*				
	Ability5	0.717				
	Ability6	0.551				
	Ability7	0.612				
	Ability8	0.791				
Business Performance	Perf1	0.583	0.559	0.748	0.731	0.832
	Perf2	0.737				
	Perf3	*0.906*				
	Perf4	0.729				

(Source: Analysis results)

Discriminant validity analysis is also an essential step in evaluating the outer model. Discriminant validity reflects the degree of divergence among a set of indicators to distinguish one construct from another. Discriminant validity criteria are met if the square root of the AVE value (√AVE) that appears on the diagonal line must be greater than the correlation coefficient value of each variable (Hair et al., 2013). The evaluation results in the illustration Table 4 indicate that the discriminant validity of the studied variables has been met. Thus, the evaluation of the outer model is continued to ensure the predictive power of the formed model.

Table 4: Results of Discriminant Validity Analysis

Variables	Buss	Ability	Perf	Govern	Innov	Intellect
Business	0.804					
Business Ability	0.737	0.758				
Business Performance	0.551	0.701	0.748			
Government	0.683	0.864	0.648	0.867		
Innovation	0.431	0.546	0.756	0.439	0.773	
Intellectual	0.588	0.697	0.664	0.561	0.606	0.775

(Source: Analysis results)

Special estimates are needed to determine the predictive power of a model. Therefore, the model was evaluated by considering the Q square (Q^2). This value predictive relevance model measures how well the model generates the observed value (Chin, 1998). The value of Q^2 is based on the coefficient of determination of all endogenous variables. The magnitude of Q^2 has a value with a range of $0 < Q^2 < 1$, the closer the value to 1, the better the model. This structural model has three endogenous variables: innovation, business capability, and performance. It can be determined that three coefficients of determination (R^2) are used as the

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basis for calculating the Q^2 predictive relevance model. The value of Q^2 in Table 5 shows a value of 0.9743. These results indicate that 97.43 percent of the models formed have good predictive quality.

Table 5: Results of Predictive Model Relevance Analysis

Structural Model	Endogenous Variables	*R-square*
1	Innovation	0.382
2	Business Ability	0.866
3	Business Performance	0.690
Calculation: $Q^2 = (1-[(1-R^2 1)(1-R^2)(1-R^2)]$ $Q^2 = (1 - [(1-0.382)(1-0.866)(1-0.690)] = 0.9743$		

(Source: Analysis results)

The term fit has a different meaning in PLS-SEM in compression with CB-SEM. The goodness of fit (GoF) refers to the geometricmean of the extracted mean variance and the average R^2 for the endogenous variables. The calculation of the average AVE value obtained is 0.621, and the average R2 is 0.646. Thus, the GoF value obtained is 0.633. The results of this GoF analysis show a strong fit of the model, namely: weak = 0.1; medium = 0.25; strong = 0.36. These results indicate that the model's overall fit is solid for estimating.

Table 6: Direct Effect Results

No	Effect	Path Coefficients	T-Statistics	Prob.	Remarks
1	Intellectual → Innovation	0.509	2.985	0.003	H1 accepted
2	Intellectual → Business Ability	0.173	1.289	0.198	H2 rejected
3	Business → Innovation	0.050	0.222	0.825	H3 rejected
4	Business → Business Ability	0.321	2.012	0.045	H4 accepted
5	Government → Innovation	0.119	0.507	0.612	H5 rejected
6	Government → Business Ability	0.513	2.866	0.004	H6 accepted
7	Innovation → Business Ability	0.078	0.907	0.365	H7 rejected
8	Innovation → Business Performance	0.532	4.638	0.000	H8 accepted
9	Business Ability → Business Performance	0.410	3.463	0.001	H9 accepted

(Source: Analysis results)

In evaluating the inner model, the structural model is tested by testing hypotheses, both on direct and indirect effects. As shown in Table 6, intellectuality positively and significantly affects innovation (β=0.509, T_{Stats}= 2.985). These results indicate that hypothesis 1 (H_1) is accepted. The more support from academics (intellectuals) increases, the greater the innovation of SMEs in business activities directly. However, academic support did not directly impact business ability (β=0.173, T_{Stats}=1.289). These results indicate that hypothesis 2 (H_2) failsto be accepted and implies that the efforts made by academics to provide support to SMEs cannot directly determine the improvement of their business capabilities.

In another analysis (Table 6), support from the business community for innovation does not directly affect (β=0.050, T_{Stats}= 0.222). These results lead to the rejection of hypothesis 3 (H_3). Therefore, these results can

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provide meaning, but support from the business community does not necessarily determine the innovation of SMEs in business activities. However, support from the business community determine the increase inthe business capacity of SMEs (β=0.312, T_{Stats}=2.012). Thus, hypothesis 4 (H_4) is accepted. To Table 5, the role of government support did not directly affect innovation (β=0.119, T_{Stats}= 0.507),so hypothesis 5 (H_5) failed to be accepted. These results indicate that support from the government may not necessarily determine the increase in SMEs' innovation in business activities.

Other analysis results show that government support directly impacts business capacity (β=0.513, T_{Stats}= 2.866). These results indicate that hypothesis 6 (H_6) fails to be rejected and implies that the increased support provided by the government will ensure an increase in the business capacity of SMEs. Other results, innovation does not directly affect business ability (β=0.078, T_{Stats}= 0.907), so hypothesis 7 (H_7) fails to be accepted. This result means that the innovation efforts carried out by SMEs are not necessarily able to determine the improvement of their business capabilities. However, the innovation conducted by SMEs ensures an increase in their business results (β=0.532, T_{Stats}= 4,638), and for these results, hypothesis 8 (H_8) is accepted. Likewise, the business ability can determine the increase in business performance (β = 0.410, T_{Stats} = 3.463), and it can accept hypothesis 9 (H_9). This result means that the ability of SMEs in business activities can determine the increase in the achievement of their business results.

In examining the indirect effects, the potential indirect effects (significant results) were identified on the specific indirect effects. The examination results show that two indirect effects have a significant effect, as shown in Table 6.

Table 7: Results of Indirect Effects Examination

No	Effect	Path Coefficients	T-Statistics	Prob.	Remarks
1	Intellectual → Business Performance	0.271	2.370	0.018	Innovation as a mediation variable
2	Government → Business Performance	0.211	2.260	0.024	Business ability asa mediation variable

(Source: Analysis results)

Based on Table 6, innovation determines the indirect effect of intellectual on business performance (β=0.271, T_{Stats}= 2.370 with probability below 0.05). These results indicate that SMEs' innovation in business activities is determined by the support of academics and later can increase the achievement of their business results.Another case is the indirect effect of government support on business performance, where business ability is an intervening variable (β=0.211, T_{Stats}= 2.260 with probability below 0.05). These results indicate that the increase in the business capacity of SMEs tends to be determined by government support so that, in the end, they can improve their business performance. Meanwhile, the role of support from the business community cannot provide indirect variations for improving the business performance of SMEs.Based on the analysis results above, the overall model diagram of the research results is presented in Figure 2.

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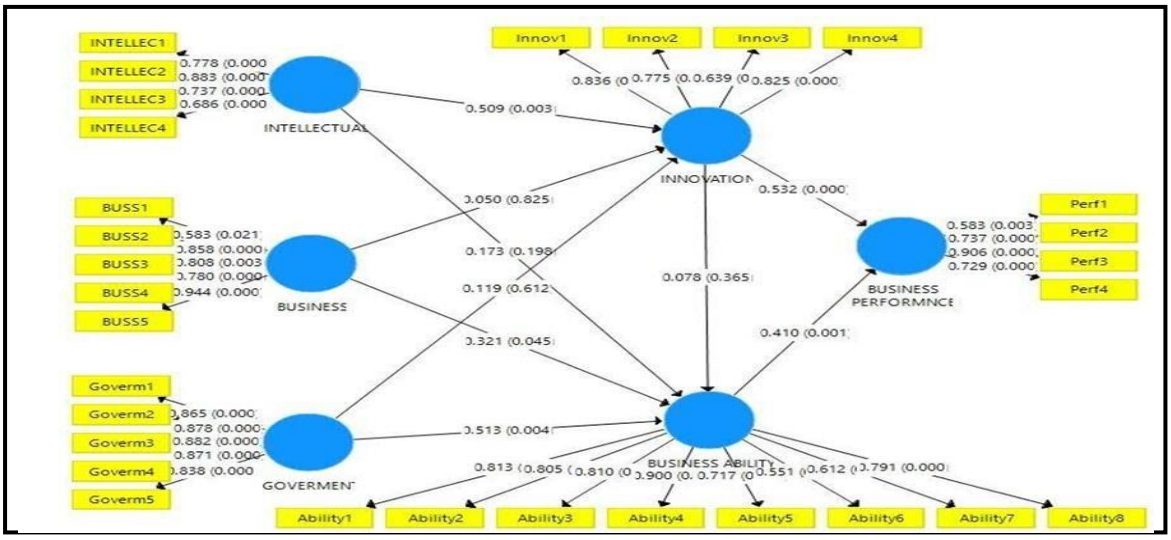

Figure 2: Full Model Analysis Result

5. Conclusions

Based on the analysis and discussion results, it can be concluded that the role of Triple Helix, which can determine SMEs' innovation in business activities, is determined by the support of academics. Meanwhile, the support of the business community and the government has not been able to determine the variations of increasing innovation from SMEs. Increasing business capacity tends to be determined by the business community's support and the government. Meanwhile, academic support cannot determine the increase in the business capacity of SMEs. SMEs' business performance increase is proven to be determined by their innovation and business capabilities. Meanwhile, innovations made by SMEs improve their business capabilities. Another finding shows that the increase in the business performance of SMEs based on innovations in business activities is determined more by academic support. The achievement of business results from SMEs based on their business capabilities tends to be determined by government support.

There are several limitations. The survey was limited to SMEs participating in the government's mentoring program, limiting the generalizability of the findings. Future research should discuss export SMEs in Indonesia. This study was cross-sectional, so information collected for different time frames and contingent effects could not be confirmed. This condition provides direction for future research to conduct longitudinal studies to overcome this limitation. Finally, future research can adapt this model by collaborating with quantitative and qualitative approaches. Apart from these limitations, this research can be used as a basis for future research in understanding the application of the triple helix concept as a determining factor for innovation and business capability so that the business performance of SMEs is increasing.

6. Acknowledgments

This research is the result of a research grant funded by Universitas Mahasaraswati Denpasar with contract number K.105/B.01.01/LPPM-UNMAS/V/2021

ISSN: 2247 - 6172
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ISSN: 2247 - 6172
Review of Applied Socio-Economic Research
(Volume 24, Issue 2 / 2022), pp. 174 - 191
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Manuscript received: 20.02.2022

Manuscript received in revised form: 10.09.2022

Manuscript accepted: 14.10.2022