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Contents

Editorial

Dear Readers,

On behalf of the Institute of Human Resource Advancement, University of Colombo, I am glad to present Volume 8, Issue II (December_2021) of the Journal of Institute of Human Resource Advancement (JIHRA). Journal of Institute of Human Resource Advancement (JIHRA) of the University of Colombo is a multidisciplinary, bi-annual, peer-reviewed, hard-bind journal aiming to promote and enhance research in all fields of Social Sciences and Humanities. Further, it draws attention to the relevant and contemporary areas of scientific research on the subject of the journal ensuring high-quality publications to the interested practitioners and academics in the field of Social Sciences and Humanities. The journal has established in 1999 as a peer-reviewed journal published once a year. However, in 2020 it was started publishing as a bi-annual, peer-reviewed, and hard-bind journal. Further, it has been taken necessary steps to publish this journal as an online journal as well.

As the Editor in Chief of this journal wishes to thank readers, authors, reviewers, and all the members of the editorial committee for their kind contributions and immense support which have made the journal mature and active. Thank you.

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Affecting Factors for Technological Adaptation of Agro-based Small and Medium Enterprises (SMEs) in Sri Lanka

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Abstract

The development of Small and Medium Enterprises (SMEs) has been recognized as the most effective way for sustainable economic development for both developing and developed nations. SMEs face several challenges in their business operations, and according to the literature, technological adaptation was identified as a challenge for the survivability and growth of SMEs. This study aims to investigate the factors affecting the technological adaptation of agro-based SMEs in Sri Lanka. Researchers employed the quantitative methods using the data collected from 460 SMEs covering all nine provinces in Sri Lanka. This study emphasizes the importance of encouraging the entrepreneurial associations leading to building networks among SMEs. It could be achieved by providing a platform to share the resources/knowledge and experiences, giving technological knowledge to help SMEs to become more productive/efficient and competitive, offering specific bank loans to acquire the technological equipment, facilitating SMEs to increase the market competition, and encourage their movement to the next structural cycle. These factors should be addressed to enhance the growth and social development of Sri Lanka by improving the survivability and performance of SMEs via technological adaptation.

Keywords: *Sri Lanka, Sustainable Economic Development, Technological Adaptation*

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Introduction

Technological development could be considered as a one of the major factor that determine the competitiveness and sustainability of any business firm as well as the economic growth and development of all the nations. Business organizations that want to develop and gain the competitive advantages or enter to new markets can not avoid the new technologies. But, it is a challenge for all types of business organizations in the present enviroment to keep the pace with the turbulent technological advances. Thus, the technological adaptation of business organizations has drawn the attention of researchers and policy makers.

In the different types of business organizations, the Small and Medium Enterprises (SMEs) have been recognized as the engine of sustainable economic development in developed and developing nations. Since SMEs are a critical driving force for both developing and developed economies, it has received the interest of governments and scholars. Accordingly, SMEs are identified as the most dynamic and vulnerable business in the global economy (Torres-Ortega et al., 2015). The major issue identified regarding SMEs, particularly in developing countries, is that a considerable percentage of SMEs are closed down within a very short period of their business commencement (Prasanna et al., 2019; Jayasundara et al., 2019). In the Asian context, especially in developing nations, 70% of the SMEs closed down after three years of their business commencement, and 60% of businesses closed down in their first year (Priyanath & Premaratne, 2015). Noe et al. (2017) revealed the main reason here is the three competitive challenges: global challenges, technological challenges, and sustainability challenges, originating from the free market environment in the globalized economy. Within the above major challenges, various scholars have identified technology-related issues such as inadequate technological know-how and suitable improved technology, low adoption of innovative strategies, and lack of capital. Technological adaptation/improvement refers to discovering new techniques/methods or improving existing techniques or methods (Noe et al., 2017).

As economic globalization is identified as an opportunity for businesses to gain through participation in global trade (WTO, 2016; Naradda Gamage et al., 2020), and the gain of global trade or survivability in the global

market is dependent on the competitiveness of the business entities in the global market (Prasanna et al., 2019; Naradda Gamage et al., 2019), the SMEs could not to isolate in the current globalized business environment and should necessarily face the challenges arising from the global market. Thus, the factors affecting the technology adaptation of business entities are an important topic to be researched to ensure the survivability and growth of SMEs in a globalized market environment and move to the next business scale.

Accordingly, the affecting factors for the technological adaptation of SMEs have been investigated by using different approaches. These factors have been categorized as demand determinants, supply factors, and environmental characteristics (Hall & Khan, 2003), environmental, organizational, and technological factors (Darbanhosseiniamirkhiz & Ismail, 2012), owner/manager characteristics, organizational characteristics, and external factors (Abdullah et al., 2012), and pressure from customers, ease to use, the need, and capital (Nugroho et al., 2017). Although studies have generated evidence on factors affecting the technological adaptation of SMEs, the sluggish nature of change or improvement in technology or low rate of technological innovations in the SMEs in developing Asian nations could be recognized; this indicates the need for a research niche in the field. According to the Asian Development Bank (ADB, 2009), except for the newly industrialized nations, most parts of Asia do not innovate in the same way that firms in industrialized countries do. Further, the firms in developing countries are not pushing the frontiers of technology outwards or making original innovations. Most of their innovations are limited to introducing products or processes nationally or sub-nationally. In a comprehensive literature review, Prasanna et al. (2019) identified some constraints in adopting new technologies in SMEs and recognized the lack of initial capital required in acquiring new technologies, lack of skilled labors, lack of suitable strategies to utilize the technology, lack of information, and uncertainty are the limitations the scholars mostly highlighted. Thus, this study aims to investigate the factors affecting the technological adaptation of SMEs in developing Asian nations by considering Sri Lanka as a case.

Although 16.1 million population in Sri Lanka are living in rural sector (HIES, 2016) and more than 70% of the population living in rural areas

are depending agriculture (Ministry of Agriculture Development, 2007), very limited studies have been done regarding the agro-based SMEs. Therefore, this study was conducted covering the agro-based SMEs, with the aim to help for policy formulation with the fulfillment of specific knowledge gap.

Definition for technological adaptation

Technological adaptation/improvement refers to discovering new techniques or methods or improving existing techniques or methods (Noe et al., 2017). The technological adaptation can be plainly defined with the definition of "technology readiness" developed by Parasuraman and Colby (2001). They defined technology readiness as "people's propensity to embrace and use new technologies to accomplish goals in home life at the workplace." This definition could be altered as "firm propensity to embrace and use new technologies for accomplishing the business goals" for SMEs. Additionally, as the owners/managers make the most decisions in small firms (Richbell et al., 2006), the technological adaptation could be a decision of the individual as well. According to Parasuraman and Colby (2001), technological adaptation is dependent on people's beliefs and thoughts. On the one hand, technology is a positive factor that motivates technological adaptation.

On the other hand, technology could be viewed in a negative perspective, which results in feeling uncomfortable about technology, which demotivates technological adaptation. According to Parasuraman and Colby (2001), technological readiness dimensions are optimism, innovativeness, discomfort, and insecurity. The optimism indicates the optimistic view of the technology as the technology improves work efficiency and workers' performance. Innovativeness indicates a person's incentives to do experiments with new technology and use the updated technology-based commodities. Discomfort refers to the lack of ability to use modern technology and lack of confidence to work with modern technology. The final one, insecurity, indicates the suspicion of technology-based transactions and uncertainties on the technology's capabilities. The optimism and innovativeness can be considered as the *contributors*, and the last two could be viewed as the *inhibitors*. Parasuraman and Colby (2001) developed this concept to define individuals' technological readiness, but it is highly applicable for SMEs as well.

Definition for SMEs

International organizations and countries have published many definitions for SMEs. These definitions are based on the characteristics of SMEs such as annual turnover, number of employees, production capacity, input usage, capital assets, management practices, and some specific factors related to the sector, region, and country (Prasanna et al., 2019; Bandara et al., 2020). The lower and upper threshold levels of those characteristics can be varied. This study used the definition referred by the World Bank (Ayyagari et al., 2011) based on the number of employees. The firms with 5 to 19, 20 to 99, and more than 100 employees are defined as small, medium, and large-scale organizations, respectively.

Theoretical Background

As revealed by the neoclassical and endogenous growth theories, technological progress is one of the necessary conditions for the growth of the economy or a specific sector of the economy. It is also common for SMEs. Additionally, technological adaptation and improvement in SMEs are recommended for moving the next structural cycle of the economy, particularly in developing nations (Prasanna et al., 2019). Technological progress helps increase the productivity and efficiency of the production factors – land, labor, capital, and entrepreneurship – and increase the production input usage and make inventions and innovations. Besides, technological improvements shift the production frontier (PPF) (Kumara, 2019).

The Solow growth model further emphasized the importance of technology (Todaro & Smith, 2015). The Heckscher-Ohlin Theory considered technology as a driver of growth (Chong & Zanforlin, 2000). The study of Grossman and Helpman (1991) revealed that a nation that is less endowed the human capital could benefit from the increasing returns by absorbing foreign technology. Further, they could gain endless benefits from that through the open economy.

Considering the behavior of firms in adaptation to a new technological method, Hall and Khan (2003) pointed that when the number of users of an innovation plotted versus the time, it will result in a typical and S-shaped curve or an Ogive distribution. The technological adaptation process shows slow growth at first, offers an acceleration when it

spread through the potential adopters and slows down when the related stakeholders become saturated.

Literature review

Schumpeter revealed three principal stages in the process of changes – invention, innovation, and diffusion. The invention refers to the generation of a new idea, and it is subsequent to the development to overcome its implementation difficulties occurring due to conceptual and practical terms. When the entrepreneurs believe that it is possible and worthy to commercialize the invention, stage two – innovations happen. The widespread knowledge is referred to as diffusion – the final stage (Ferguaon & Ferguson, 1994). The diffusion results from a series of individual decisions taken to adopt the new technology (Hall & Khan, 2003). In making this decision, the business entities should compare the new invention's uncertain benefits with the uncertain costs incurred to the adaptation. The limited information on the benefits and costs of the new technology affects the decision process, and the decisions made by the suppliers of new technology can affect the benefits and costs of new technology as well. As emphasized by Hall and Khan (2003), investigating the factors affecting the choice of adopting new technologies is necessary for economists who analyze the determinants of growth and for the creators and producers of such technologies.

Unlike invention and innovation, diffusion shows a continuous and slow process. According to Rosenberg (1972), two significant factors affect the spread of inventions - overall slowness of diffusion and wide varieties in the rates of acceptance of different inventions. In recent studies, technological adaptation moved to a new area developed by Stoneman (2001). According to him, adapting to new technology is similar to the kind of investment under uncertainty. When it considers technological adaptation in the investment perspective, some characteristics can be identified – uncertainty over future profit streams, irreversibility that creates at least some sunk costs, and the opportunity to delay.

Technological adaptation and business performances

Technological adaptation has been identified as a major factor that influences the competitiveness, growth, and sustainability of business entities (Prasanna et al., 2019). The technology operates in

competitiveness in two ways, first by altering the price structure by developing more efficient and flexible processes, and second by enabling the creation of better products of greater quality, better design, after-sales service, and short delivery periods (Vinas et al., 2001). Thus, the economies that recorded significant growth had been referred to as the link between technological adaptation and business performance in their policy planning.

As technological adaptation is a significant driver that improves national production through enhancing the performance of business entities, it has drawn the special attention of governments. Soon (1994) revealed that the SME master plan of Singapore promotes best practices in the business through easy access to consultancy, technology adoption, and training. These are the highlighted factors for SMEs' success and growth. Technology adoption, application, and innovation are identified as the first of five strategic thrusts for growth in the master plan. Soon (1994) emphasized that the transfer of technology is one of the primary causes for the economic success of Singapore. As revealed by Singh et al. (2009), the government of India has established many institutions to assist small firms across several functions, including adopting the technology. In their study, Bilal and Al Mqbali (2015) suggests that the government should support the SMEs by encouraging SMEs with adequate technology for providing sustainability of SMEs and their contribution to Oman economy.

Technology transfer

Technology transfer is identified as a way that SMEs acquire modern technology. As revealed by Chew and Yeung (2001), the concept of technology transfer entails how technology possessed by one party (the owner) is acquired by another party. A transfer is considered successful if the recipient fully receives the technology. In the literature, technology transfer has been classified into three types as hardware, codified knowledge, and un-codified knowledge.

Building linkages with MNCs and TNCs, and providing technological knowledge with the governments or Non-Government Organizations (NGOs)' support are highlighted by most scholars as to the main sources of acquiring technological knowledge by the SMEs. According to

Eriksson and Chetty (2003), firms obtain access to external knowledge they can combine with their existing knowledge through the interaction of business relationships. The prior related experience also facilitates the development of new knowledge in a business.

In the current globalized world, the economy of all types of business entities, including SMEs, is operating in an ever-changing, highly volatile environment characterized by the rapid rate of technology change (Nordman & Tolstoy, 2013; Nugroho et al., 2017). As revealed by Nugroho et al. (2017), when dealing with the highly volatile business dynamics and the new findings of various developmental methods of doing the works, technology plays a prominent role in supporting the business competitiveness. The changes in business dynamics may not create difficulties for businesses with adequate capital, but to SMEs with insufficient funds, it is difficult to allocate considerable funds for technology.

As the lack of finance limits SMEs' allocation on technology development, there is a possibility for minimum technological adaptation in SMEs (Nugroho et al., 2017). Thus, Parasuraman (2000) attempted to calculate a Technology Readiness Index (TRI) to measure the readiness of technology use with the dimensions consisting of optimism, innovativeness, discomfort, and insecurity. Thus, investigating the factors affecting technological adaptation has been an interesting topic among scholars who believe that the development of scientific knowledge and its application is the key driver of economic development.

Deterministic factors for technological adaptation

Since technological adaptation is identified as a highly significant factor for improving the business competitiveness and the survivability of SMEs, many scholars have investigated the affecting factors for technological adaptation in multiple ways. Darbanhosseiniamirkhiz and Ismail (2012) assessed the critical factors that influence the adoption of Advanced Manufacturing Technologies (AMTs) through an in-depth theoretical investigation. Their study centered on three contexts – environmental (external pressure, supplier support, financial resources), organizational (organizational structure, organizational culture, manufacturing strategy, HR practices, top management), and technological (perceived benefits,

technology-in-use).

Hall and Khan (2003) investigated the factors affecting the rates of spread of new technologies under three main groups-factors that influence the demand for adoption, factors that influence the supply characteristics of the new technology, and the environmental attributes in the decision on technological adaptation. The skill level of workers and state of capital goods sector, customer commitments and relationships, and network effects are the demand determinants.

The supply-side factors are the improvements of new technology, improvements in the old technology, and complementary inputs. The environmental and institutional factors are market structure and firm size, government support, and regulations.

Nugroho et al. (2017) investigated the SMEs' technology adoption readiness factors in Yogyakarta, Indonesia, by using the qualitative method. They found the factors influencing SMEs' readiness to adopt information technology, including pressure from customers, in general ease of use, the need, and capital.

Abdullah et al. (2012) investigated the factors affecting technology adaptation under three main categories. They are SME's owner-manager characteristics (knowledge, skills, qualifications, commitment, passion, leadership style, technology know-how, and awareness), organizational characteristics (teamwork, staff competencies, culture), and external factors (networking, government support). Accordingly, the internal factors and SME's owner-manager characteristics significantly impact the technology adoption of SMEs.

Methodology

Sample selection

This study investigates the affecting factors for technological adaptation in developing Asian nations by considering Sri Lanka as a case. The study's focus was narrowed down to an agro-based SME sector in Sri Lanka to maintain the uniqueness of the analysis. A random sample of 460 agro-based SMEs in Sri Lanka was surveyed by using a semi-structured questionnaire from March to August 2020 to achieve this objective. The

reason for selecting the ago-based SMEs was that the rural economy is primarily based on agriculture. Hence the agro-based industrial system may significantly impact the issues prevailing in the rural economy, such as unemployment and poverty. Additionally, the agricultural sector represents 24.52% of total employment in Sri Lanka (CBSL, 2019). The research covered all nine provinces in Sri Lanka and three major agro-ecological zones – dry zone, intermediate zone, and the wet zone.

Econometric model

This study utilized descriptive statistics to identify the challenges faced by SMEs in technological adaptation. A binary logistics regression model was employed to determine the factors affecting the technological adaptation of ago-based SMEs in Sri Lanka, and STATA 16/IC software was used for data analysis.

The binary logistic regression has been used for numerous studies that investigate taking a decision such as adopting or rejecting the technology (Ntshangase et al., 2018). The binary logistic regression has been widely used in the analysis of farmer adoption decisions (Prasanna et al., 2012). The model's dependent variable was the SME being adopted or non-adopted to use modern technological methods, with a value of 1 - if the SME adapts to new technology- or 0 - if the SME non-adopt to new technology. The logistic model predicts the logit of the response variable (adoption to new technology) from the independent variables. According to (Gujarati, 2003), the likelihood of the SME is an adopter of new technology predicted by odds (Y=1); that is, the ratio of the probability that Y=1 to the probability that Y≠1. Then is simply the odds ratio in adapting to the new technologies – the ratio of the probability that an SME adjusts to new technologies to the probability that an SME does not adapt to new technologies.

$$Odd\ Y = \frac{p(Y=1)}{(1-p(Y=1))} \ldots\ldots (1)$$

The model of this study can be specified as equation (2). The logit (Y) is given by the natural log of odds,

$$ln\left(\frac{p(Y_i = 1)}{(1 - p(Y_i = 1))}\right) = log\ Odds = logit\ (Y) \dots\dots (2)$$

Equation (2) can be expanded as follows:

$$Logit\ (Y) = \alpha + \sum \beta_1 x_1 + \sum \beta_2 x_2 + \cdots + \sum \beta_n x_n + \varepsilon_i \dots\dots (3)$$

Where, Y = adoption to new technology (dependent variable) with 1 = adoption and 0=otherwise; α= intercept; coefficients of the independent variables; =probability of adopting new technologies; = probability that an entrepreneur does not adopt new technologies; ln = natural log.

With the independent variables, equation (3) can be expressed as follows:

$$logit\ (Adoption) = ln\left(\frac{p}{1-p}\right)$$
$$= \alpha + \beta_1 edu + \beta_2 feedback + \beta_3 exibition + \beta_4 techknow + \beta_5 loan$$
$$+ \beta_6 export + \beta_7 association + \beta_8 expand + \beta_9 competition + \beta_{10} level + \varepsilon_i$$

Table 1. Description of the variables incorporated in the logistic model

Variable	Description
edu	The education level of the entrepreneur measured on an 8-point scale
feedback	Level of sensitivity to the customer's feedback/comments.
exhibition	SME's experience in attending the entrepreneurial exhibitions (Dummy)
techknow	Having the technological knowledge from government, private organization, or NGO (Dummy)
loan	Having a loan (Dummy)
export	Engaging with the exporting (Dummy)
Association	Being a member of an entrepreneurial association (Dummy)
expand	SME's willingness to expand the business (Dummy)
competition	The market competition facing the SMEs (Dummy)
Level	The geographical level at which the SME operates measured on a 5-point scale

The log-likelihood ratio was used to assess the overall significance of the model. Multicollinearity among the independent variables was checked using the Variance Inflation Factors (VIF).

Results and Discussion

Profile of the surveyed entrepreneurs in the agro-based SME sector

Table 2 presents the descriptive statistics of the background information of the surveyed SMEs and the information on the variables incorporated in the binary logistic model. According to Table 2, 72.8% of the surveyed entrepreneurs are males. As revealed by ADB (2013), women in South Asia own only 8 to 9 percent of formal SMEs, compared with 38 to 47 percent in East Asia, Central Asia, and Eastern Europe. The Global Gender Gap Report provides gender inequality scores on a country's performance against four sub-indices, including economic participation. Sri Lanka generally holds the best ranking of these indices among the South Asian countries (ESCAP, 2015). Canada and Brusca (1991) refer to the term "technological gender gap," denoting the idea that males and females have different technology-related attitudes, behaviors, and skills. They showed evidence for the existence of the technology gender gap. Orser and Riding (2018) found that female owners of SMEs are less likely than males to adopt IT in Canada.

As revealed by de Mel et al. (2009), ethnicity impacts entrepreneurial activities in Sri Lanka, where most entrepreneurs are Sinhalese (68.5%), and 27% are Tamils. Most Muslims engage in businesses, but they are traders rather than entrepreneurs. Most Sinhalese are Buddhists, and the religion of 68.5% of entrepreneurs is Buddhism. The average age of entrepreneurs is 48 years, and the average age of the surveyed SMEs is 15 years. The dry zone holds 55.4% SMEs, the intermediate zone has 20.9%, and the wet zone has 23.7%.

Out of the surveyed SMEs, 66.7% produce agricultural-based goods and services, while 33.3% produce primary agricultural products. Following Lewandowski et al. (2017), livestock farming has considered a primary agricultural product. Many entrepreneurs (66.1%) have registered their businesses at least in the Divisional Secretariat office, as it is a legal requirement, especially for food products. The average number of

employees is seven.

The majority (67.2%) of entrepreneurs use modern technological methods for their businesses. Most entrepreneurs had G.C.E. (A/L) qualification, accounting for 42.2%, and 5.9% had postgraduate degrees, 32.8% had diplomas, and a very few (0.4%) had no schooling. Thus, most entrepreneurs are educated, which is an outcome of free education in Sri Lanka.

Most entrepreneurs (91.3%) are highly sensitive to consumer feedback/ comments, while very few (1.1%) were not sensitive. Furthermore, 40.4% have participated in entrepreneurial exhibitions, whereas 56.3% have acquired the technological knowledge related to their business through the government, private/international organizations, or non-government organizations (NGOs). While 41.5% have received a loan, very few SMEs (3.1%) engage with export activities, and only 16.1% of the total sample have membership in an entrepreneurial association. Most entrepreneurs (88.5%) are willing to expand their business in the future, and 59.8% face high market competition—this indicates the market potentials for expanding the business. Most SMEs (57.6) are operating at the divisional level, and very few (3%) are conducting their businesses at the international level.

Table 2. Descriptive Statistics of the Surveyed Entrepreneurs

N = 460

Variables	Value	%	Variables	Value	%
Gender	*Male*	72.8	Education	*No schooling*	*0.4*
	Female	27.2		*Primary education (up to grade 6)*	*2.4*
Ethnicity	*Sinhala*	*68.5*		*G.C.E. (O/L)*	*12.2*
	Tamil	*27*		*G.C.E. (A/L)*	*42.2*
	Muslim	*4.3*		*Diploma*	*32.8*
	Other	*0.2*		*Degree*	*3.9*
Religion	*Buddhist*	*68.5*		*Postgraduate degree*	*5.9*
	Hindu	*24.6*		*Other*	*0.2*
	Islam	*4.3*	Feedback	*Highly sensitive*	*91.3*
	Christian	*2.6*		*Sensitive*	*2.6*
Age (years)	*(48.18)*			*No sensitive*	*1.1*
Age of the firm	*(15.6)*			*No idea*	*5*
Location	*Urban*	*26.1*	Exhibition	*Participated*	*40.4*
	Rural	*73.9*		*Not Participated*	*59.6*
Geological Location	*Dry zone*	*55.4*	Technological knowledge	*Yes*	*56.3*
	Intermediate zone	*20.9*		*No*	*43.7*
	Wet zone	*23.7*	Loan	*Yes*	*41.5*
Nature of the business	*Primary agricultural products*	*33.3*		*No*	*58.5*
	Agro-based goods and services	*66.7*	Export	*Yes*	*3.1*
Registration status	*Registered*	*66.1*		*No*	*96.9*
	Non-registered	*33.9*	Association	*Yes*	*16.1*
Number of employees	*7.3*			*No*	*83.9*

Adopted to new technology	Yes	67.2	Expand	*Yes*	*88.5*
	No	*32.8*		*No*	*11.5*
			Competition *40.2*	*Higher*	*59.8*
			Level	*Divisional level*	*57.6*
				District level	*19.3*
				Provincial level	*6.3*
				National level	*13.7*
				International level	*3*

Source: Survey data

Note: Mean values are indicated in parenthesis Low

Results of diagnostic tests

Before estimating binary logistic regression models, the multicollinearity diagnostic statistics – Variance Inflation Factor (VIF) and tolerance (1/ VIF), were calculated to check the correlation between independent variables – multicollinearity. According to Table 3, the VIF values for all variables were less than 2.1, and the mean value of VIF was 1.13. This result confirmed that there is no strong correlation between independent variables.

Table 3. Variance Inflation Factor (VIF)

Variable	**VIF**	**1/VIF**
techknow	1.27	0.789101
exibition	1.17	0.853304
level	1.16	0.861499
export	1.14	0.879183
edu	1.12	0.896012
expand	1.11	0.897061
competition	1.10	0.907471
association	1.10	0.911370
feedback	1.09	0.913703
Loan	1.08	0.923545
Mean VIF	1.13	

Source: Survey data

Results of binary logistic estimation

Table 4 presents the output of the binary logistics estimation. The Pseudo R^2 was used to measure the goodness-of-the-fit of the estimated model, which is 23%.

The results of binary logistics regression show that the education of an entrepreneur, holding all other variables constant, is a critical factor affecting the technological adaptation of SMEs. The education factor is statistically significant at the 5% level (p=0.030). This variable is positively linked with the dependent variable, indicating the receptiveness toward technology among the educated entrepreneurs; the more educated entrepreneurs tend to adopt more of new technology. As a country that provides free education for all, Sri Lanka has no issue promoting technological adaptation through this determinant.

Sensitivity to customer feedback is another determinant for technological adaptation, and the impact of this variable is statistically significant at the 10% level (p=0.054). This is positively linked with technological adaptation, signifying that the firms with higher sensitivity to customer feedback tend to adopt more of new technologies. This is primarily based on the customers' comments on the quality and price of the goods, which may enhance the firm's performance and survivability by catering to consumer preferences and increased demand.

With the understanding of those benefits, the large-scale businesses maintain the registries or another type of communications for getting customer feedback. Still, that practice is low in SMEs. Having the technological knowledge from the government, private sector, or Non-Government Organizations (NGO) is another factor that is significant at a 1% significance level (p=0.0000). Sri Lanka has an organized institutional body to disseminate technological knowledge on producing agro-based goods.

The large-scale private sector firms, including multinationals, transfer the knowledge to SMEs for connecting them with their supply chain. Having a bank loan is also an essential positive determinant that is significant at the 5% significance level (0.03). One primary purpose of applying for a bank loan by Sri Lankan SMEs is purchasing the manufacturing

equipment. In some of the cases, the technological transfer that happens through the above ways could not be effective because of the higher prices of imported equipment in Sri Lanka, caused by the continuously depreciating exchange rate.

Being a part of the entrepreneurial association/network is another positive determinant of technological adaptation, which is significant at a 5% significance level. This is a highly effective way of sharing knowledge and experience, and Hall and Khan (2003) have confirmed this determinant. The entrepreneur's ambitions for expanding the businesses is another determinant for technological adaptation that shows a positive relationship at the 1% significance level (p=0.0000). It can be argued that all firms expect to expand their businesses.

However, in some cases, SMEs have been stagnated as they cannot move to the next stage. Some SMEs that make the products with cultural identity do not mean to expand their businesses as they have a very limited market, low survivability, and follow traditional production technologies; this positively impacts technological adaptation and shows a 1% significance level (0.0000). At the higher competition, SMEs tend to adopt new technologies to enhance their survivability in the market and make a profit. The business operating level is also a positive determinant significant at the 1% significance level (0.0000). That means the SMEs tend to adopt more with the new technology when extending their businesses for the divisional, district, provincial, national, and international levels.

This study estimated the marginal effect of each variable. The marginal effect (dy/dx) shows the effect for small infinity changes in an independent variable when all independent variables are at their mean values or a hypothetical business entity, which is average in all characteristics. The entrepreneur's ambitions for expanding the business (EXPAND) show a higher marginal effect (dy/dx = 0.2069). This indicates that the expected probability of adapting to new technologies increased by 0.2069 with a marginal change in the entrepreneur's ambitions for expanding the business (EXPAND). Alternatively, this value can be considered as the tangent line's slope at the predicted probability when the independent variables are at their means.

Accordingly, the other independent variables - facing high competition in the market, having the technological knowledge from the government sector/private sector or Non-Government Organization (NGO), participating in an association with the other enterprises, having a bank loan, the geographical level at which the firm operates, sensitivity on the feedbacks of the customers, education level of the entrepreneur – can be arranged in descending order as per the value of the marginal effect.

Table 4. The output of the Binary Logistics Estimation

ADAPTATION	Odds Ratio	Coef.	Std. Err.	Z	P	dy/dx
EDU	1.282432	.2487582**	.1470993	2.17	0.030	.0391148
FEEDBACK	1.511469	.413082*	.3244376	1.92	0.054	.0649531
EXIBITION	1.122087	.1151899	.2899177	0.45	0.656	.0181125
TECHKNOW	2.835945	1.042375***	.7194906	4.11	0.000	.1639033
LOAN	1.732395	.5495051**	.4379737	2.17	0.030	.0864043
EXPORT	1.075619	.072896	.5242766	0.15	0.881	.0114622
ASSOCIATION	2.827199	1.039287**	1.153006	2.55	0.011	.1634176
EXPAND	3.727963	1.315862***	1.379708	3.56	0.000	.2069064
COMPETITION	3.570561	1.272723***	.881252	5.16	0.000	.2001232
LEVEL	1.599008	.4693832***	.1778035	4.22	0.000	.0738059
_cons	.0110288	-4.507247***	.0075999	-6.54	0.000	

Source: Survey data

Note: _cons estimate baseline odds, ***, **, * means statistically significant at 1%, 5%, and 10% levels, respectively.

Number of obs = 460

LR chi2 (10) = 138.33

prob > chi2 = 0.0000

pseudo R2 = 0.2376

Log likelihood = -221.98501

The identified causes for no adaptation with the modern technical methods are making the product using traditional methods, lack of finance/high cost of machinery, lack of market/demand/making limited production, and lack of technical knowledge, and others.

Table 5. Reasons for not using modern techniques

Reason	Frequency	% of non-adopters	% of the total sample
Produce by using the traditional methods	74	49.1	16.1
Lack of finance/high cost of equipment	49	32.4	10.6
Lack of market/demand/ making limited production	11	7.3	2.4
Lack of technical knowledge	4	2.6	0.8
Others	13	8.6	2.8
Total	**151**	**100**	**32.7**

Source: Survey data

According to Table 5, 49.1 of the non-adopters indicated that the use of traditional methods is a reason for not using modern techniques. That is because the sample consists of some SMEs that produce skills-based goods such as handicrafts, clay pots, etc. Labor skills are more important than modern technological equipment in the handicraft industry. Their fundamental problem is the shortage of skilled workers than the lack of technology.

Additionally, some entrepreneurs, especially the people who make clay items, believe that the traditional methods are more suitable for producing better quality goods. Another reason is that some traditional SMEs believe that machinery usage tends to increase the cost of production due to, e.g., higher electricity bills.

Lack of finance was indicated as the reason for not adopting new technology by 32.4% of non-adopters. That is the most cited reason by the scholars for no technological adaptations by SMEs. The higher cost of technological equipment makes the lack of finance issue more severe, and this is a highly significant issue that should be taken into consideration. The very high exchange rate (Rs. 180.00 for 1 USD in December 2020) and the continuous depreciation of the Sri Lankan

Rupee make the machinery expensive. This makes it more difficult for SMEs to purchase machinery. If the firm buys machinery at a high cost through a bank loan or another way, it may increase the production cost. The absence of demand and demand fluctuations in the market is another significant reason indicated by 7.3% of non-adopters. This makes uncertainty for entrepreneurs in making production decisions. In an uncertain environment, most entrepreneurs do not decide to expand their production by using new technical equipment. Thus, some entrepreneurs limit their production to the existing resources.

Lack of technical knowledge is another reason, as indicated by 2.6% of SMEs. Some entrepreneurs have no idea about the benefits of using new technology and new machinery. However, according to the survey results, the lack of technological knowledge is not a severe problem in technological adaptation. There is a well-organized institutional body, including the government-funded research institutions, for transferring the technical know-how on agro-based products. Additionally, many sources, including NGOs, MNCs, and TNCs, provide the necessary knowledge.

Some non-adopters (8.6%) pointed out many other reasons, such as the unavailability of infrastructure facilities (three-phase electricity, water), inadequate space, lack of capital, and lack of resources.

Lack of incentives is another factor that demands attention. Some SMEs are not ready to move to the next level of their businesses with modern technology due to the technological backwardness of the decision-makers/owners.

Concluding remarks

Small and Medium Enterprises (SMEs) have been recognized as the most effective way for sustainable economic development. However, the literature has identified three challenges arising from the global environment that leads to the closure of SMEs after a very short period of their commencement; technological challenges are one such reason.
According to the theoretical model developed by Klette and Kortum (2004), innovation increases the demand for firms' products. The model developed further by Cohen and Klepper (2005) revealed that innovation

increases profits by lowering the unit costs of production. According to de Mel et al. (2009), firms compete through the improvement of product qualities emanating from innovations.

In the theoretical and empirical literature, innovations are highlighted as a necessary condition for economic growth, and technological adaptation is the next step. Nevertheless, technological adaptation has become a challenge due to the higher volatility in the global technological environment. Therefore, technological adaptation is an issue faced by SMEs, as frequently discussed in the literature. In this context, empirical investigations on the determinants of technological adaptation may help identify the strategies that should be followed to improve the technological readiness of SMEs.

This study's objective was to investigate the factors affecting the technological adaptation of agro-based SMEs in Sri Lanka by employing quantitative methods. Data were collected from 460 SMEs representing all nine provinces in Sri Lanka. The results revealed that encountering high market competition, having the technological knowledge from government sector/private sector or Non-Government Organizations (NGOs), participating in an association with the other enterprises, having a bank loan, the geographical level at which the firm operates, sensitivity on the feedbacks of the customers, and the entrepreneur's education level are the statistically significant factors when the average marginal effect of the binary logistic model is aligned in descending order.

Through the descriptive statistics, this study further identified that making the product using traditional methods, lack of finance/high cost of machinery, lack of market/demand/making limited production, lack of technical knowledge, lack of infrastructure facilities (three-phase electricity, water), lack of space, lack of capital, and lack of resources and incentives are the causes for no adaptation of the modern technical methods.

Thus, this study emphasizes the importance of encouraging the entrepreneurial associations leading to building networks among SMEs by providing a platform to share the resources/knowledge and experiences. Business collaboration with networking may improve SMEs'

survivability in the global competition, and one of the cost-effective ways of adopting new technologies in the businesses is to discuss the challenge and barriers (Prasanna et al., 2019). Providing technological knowledge that helps to become more productive/efficient and competitive is vital. In this connection, many scholars have been highlighted the consequence of technological transfer from large firms to SMEs. Figure 1 shows a framework for enhancing the survivability and performance of SMEs through technological adaptation.

Usually, the technologies used by large firms are market tested and generate economies of scale. Then the larger firms can generate technological externalities to the SMEs and enable them for speed adjustment for changing market environment and adapt to innovative activities. The case of Singapore is the most cited experience for the above technological transfer. A technologically skillful workforce is a critical requirement for absorbing technological know-how and managerial techniques from large firms. This is one of the expectations that the education system of the country should fulfill.

Providing specific bank loans will help to acquire the technological equipment and facilitate SMEs to increase the market competition and encourage their movement to the next stage. Cost reductions and incentives for acquiring industrial machinery, infrastructure development, and controlling foreign competition are the most common expectations of entrepreneurs. Those factors could be considered as the recommendations that should be addressed for enhancing the growth and social development through improving the survivability and performance of SMEs via technological adaptation.

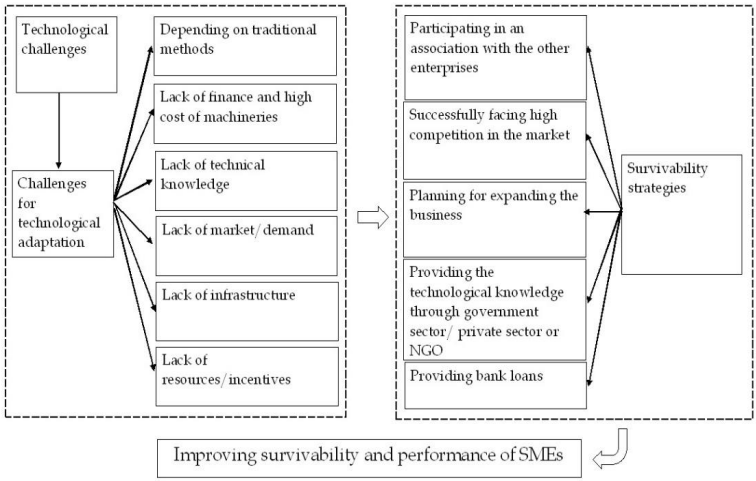

Figure 1. Framework for enhancing the survivability and performance of SMEs through technological adaptation

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Factors Affecting Turnover of the Non-State University Lecturers: A Literature Review

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Abstract

Attraction and retention of a competent workforce can be identified as one of the prime objectives of any organization. Organizations are thriving to retain their top talent within the organization as it facilitates the firms to obtain a competitive advantage over their rivals. Employees may leave their workplaces due to a variety of circumstances. Getting an understanding of these factors will be an advantage for them to take necessary actions to retain the top talent. Higher education can be identified as one of the major sectors where the overall performance of the organization highly depends on the quality of the academic staff. Hence; the main objective of this study is to identify the key factors affecting the turnover of the lecturers working for non-state universities. This study was conducted as a descriptive study as it was a review of the existing research outcomes in the field. It was found that salary, modes of recruitment and promotion, availability of office space, availability of resources, availability of washroom facilities, distributive justice, internal support, clear contracts of employment, the safety of the workplace, support from the administrative staff, staff development opportunities, perceived organizational support, recognition and respect, academic freedom and research, leadership style, performance management practices, workload, welfare facilities, training and development, and promotion opportunities are the most frequently mentioned factors affecting turnover of the lecturers.

Keywords: *HR policies and practices, Llecturers, Turnover*

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Introduction

As defined by Marell et al., (2001), employee turnover is the voluntary cessation of membership of an organization and it can result from organizational and psychological factors interacting with effect each other to affect employee attitudes in and towards the organization. Joarder et al. (2011) explain the difference between turnover and turnover intention as 'turnover' denotes the actual turnover behavior, the movement of the employees' to other organizations while the terms 'turnover intention' denotes the employees' perceived probability of leaving the current organization (Cotton and Tuttle, 1986). Joarder et al. (2011) further mention that employee turnover means employees' permanent leaving or discontinuation of the employment relationship of an employee with the organization and it may be a rotation of employees around the market; between the firms, jobs, and occupations; and between the states of employment and unemployment. As per a model of Human Resource Management, attracting and retaining appropriate and contended employees within an organization is the generic purpose of HRM (Opatha, 2009). Hence, employee retention is paramount for any organization due to several reasons. As emphasized by OLogunder et al., (n.d.), organizational growth and productivity will be directly affected by employee turnover. Additionally, organizations have to put additional effort and cost into recruitment, selection, and training. Yew (2011) further suggests that organizations are always trying to build and maintain a committed and loyal workforce to reduce absenteeism while improving employees' performance and job-related attitudes. Hence; it is of utmost importance to identify the key factors affecting turnover of non-state university lecturers as it will save the cost of future recruitment, selection, hiring, induction, and training, etc.

Research Question

The question of this descriptive study is,

What are the factors affecting the turnover of lecturers in non-state universities?

The objective of the study

The main objective of this study is to identify the key factors affecting the turnover of lecturers in non-state universities.

Method

This study was conducted as a descriptive study reviewing the existing literature in the field.

Employee Turnover

Employee turnover has a number of negative consequences for businesses, including increased recruitment and selection costs, interruption of academic programs, and worse morale among current employees (Al-Omari et al., n.d.). According to Morrell et al. (2001), turnover can be classified into two types: voluntary and involuntary turnover. Voluntary turnover was characterized by Price and Mueller (as stated in Huang et al., 2003) as voluntarily terminating membership in one organization and moving to another, altering employment positions within the same organization, or fully switching from one area of work to another. Involuntary turnover, on the other hand, is described as an employee who refuses to quit the company (Huang et al., 2003). Cost cutting and organizational reorganization are the most common causes of involuntary turnover. Many research have shown, however, that turnover is a psychological response as well as an individual chosen behavioural pattern. According to Huang et al., (2003), academic staff turnover in universities has a number of negative consequences, including increased prices and decreased service quality (Mahmoodi, 2007). Furthermore, turnover might result in a waste of management resources as well as demoralization of other personnel.

Significance of academic staff

As posited by Khalid et al. (2012), an education system in any country, especially university education plays a major role in helping a country to stand on its own feet and high-quality academic staff becomes a cornerstone of a successful education system. Yew (2011) further validates this argument by highlighting the critical role played by academics in ensuring the overall performance of an educational institution. Mwadiani (2002) has emphasized the role played by the academic staff in terms of quantity, quality, and effectiveness in the university context (Jain, 2002). He further emphasizes that no academic institution can ensure sustainability and quality (Ng'ethe, Iravo, & Namusonge, 2012)in the long run without a well-qualified and committed staff. Furthermore, university performance highly depends on the intellectual and creative abilities and commitment of the academic staff. Ng'ethe et al. (2013) have

aligned with the same argument as they identify the academic profession as fundamental to the functioning of any university (Choong et al., 2013). Also, it makes important for the universities to ensure the academic staff performance as they perform as a repository of the most specialized and skilled intellectuals (Yimer et al., 2017).

Factors affecting turnover of univerity lecturers

Based on empirical studies undertaken in the field of study, several factors affecting the turnover of academic staff at universities can be recognized. Employee turnover can be raised for a variety of reasons, according to Too et al. (2014), including inadequate pay (O Wence et al., 2014), a poor benefit system, and poor working conditions. In addition to these considerations, forms of recruitment and promotion, office space availability, internal support, clear contracts, workplace safety, support from employees, supervisors, and managers, and possibilities for staff development and career advancement can all play a role (Bigriman et al., 2016). They also stress the importance of employee retention when it comes to perceived organizational support. Employees' perceptions of their employer's interest for their well-being and value for their contribution to the organization are defined as perceived organizational support. In order to perceive organizational support, Yew (2011) stressed the social exchange link between employees and employers. According to this theory, perceived organizational support has a direct impact on affective organizational commitment and an indirect impact on employee obligation to the organization (Yew, 2011). In a social exchange relationship, both parties expect mutual benefits other than monetary values, such as social and emotional resources (approval, recognition, support, etc.). As a result, the lack of rewards and recognition, particularly among academic personnel, will result in increasing job stress and turnover. As a result, academic freedom and research activities are recognized to be extremely important in retaining academic employees. Academic freedom refers to the ability of academic personnel to teach freely, conduct research on topics of their choosing, and openly communicate discoveries and ideas without fear of retaliation (Nwadiani and Akpotu, 2002). It is also stated that, due to the increased workload, most private universities do not give enough time for academic personnel to do research. Another issue raised by Bigriman et al. (2016) is not allowing academic staff to participate in academic decision-making,

as non-academic staff tends to play supervisory roles over academic staff due to their control over budgets and administrative decisions, while their role is primarily supportive. Bigriman et al. (2016) discovered that leadership style, participation in decision-making, career path and staff development, perceived organizational support and psychological contract, organizational policies and procedures, distributive justice, performance management practices, academic freedom and collegiality, workload and pressure, and research and outreach activities are all factors that encourage academic staff to stay with the organization. Work satisfaction, corporate culture, job features, unrealistic expectations, the nature of the individual, and greater income elsewhere are all variables that might contribute to employee turnover (O Wence et al., 2014). Apart from that, being away from home for an extended period of time, an unpleasant working environment, poor management (Yimer et al., 2017), a lack of up-to-date journals and books, functional laboratories, useful seminars, and research grants (Ologunde et al., n.d.) are all factors that can contribute to academic staff turnover.

According to the findings, good welfare facilities, adequate health and medical insurance, training and development, fair pay systems, recognition for deserving lecturers, quality of supervisors, due respect, and promotions should be provided to ensure the retention of academic staff at private universities, according to Ologunde et al. (n.d.). Job happiness is linked to retention, and according to Khalid et al. (2012), both intrinsic and extrinsic factors influence job satisfaction, with intrinsic aspects being more significant to academic personnel. Structure characteristics like degree of autonomy, communication openness, distributive fairness, role conflict, and workload have a major impact on the intention to stay, according to Lee and Mowday (1987). In addition to these factors, Human Resource Management techniques have been discovered to play a significant impact in guaranteeing staff retention (Stewart and Brown, 2009).

Strong leadership, distributive justice, work environment, remuneration, promotional possibilities, training and development, recognition, and autonomy are some of the factors of employee retention, according to Ng'ethe et al. (2012). Beardwell (as cited in Ng'ethe, 2012) claims that the role of a supervisor and leadership is critical in employee retention,

and that employees quit managers, not firms. Employees are more likely to stay with an organization if they believe their managers care about them, if they understand what is expected of them, if they are assigned a role that matches their strengths, and if they receive regular positive feedback and recognition. Employee retention in an organization is influenced by the quality of the relationship that employee has with his or her immediate managers.

According to Price (as stated in Ng'ethe et al., 2012), distributive justice refers to how closely rewards and penalties are linked to work performance. Perceptions of injustice, according to Ng'ethe et al. (2012), lead to disappointments and resentment, which can lead to a loss of productivity, loyalty, and commitment to the company, or a desire to seek alternative employment elsewhere. Distributive justice is also a favorable predictor of organizational loyalty and work satisfaction, but a negative predictor of turnover intentions, according to the researchers. Another key driver of employee retention is the workplace environment. Few institutions, according to Rosser (as described in Ng'ethe, 2012), give appropriate assistance for faculty members to integrate technology into their work, and the academic staff's will to stay will be determined by the amount of facilities supplied. Because they satisfy financial and material aspirations, attractive remuneration packages are one of the most important elements in employee retention (Ng'ethe et al., 2012).

Ng'ethe et al. (2012) define promotional opportunities as an employee's perception of his or her prospects to advance and be promoted within the firm. Employees expect to work in jobs that will allow them to advance to new and more demanding roles. People should not only be rewarded financially, but also given opportunity to advance within the firm, according to Dockel (as mentioned in Ng'ethe et al., 2012). Employees that are dissatisfied with their jobs are often unmotivated and will not stay in an unfulfilling role for long. Ng'ethe et al. (2012) define training as an investment in human capital, regardless of whether it is made by an individual or a company. Another driver of employee retention is autonomy, which is defined as the extent to which a person uses power in relation to his or her job. Employees' ability to develop organizational goals and build the organization to maximize professional concerns is outlined. It relates to heightened sentiments of personal responsibility and

the degree to which the job provides extensive freedom, independence, and discretion to the individual in scheduling work and determining the procedures utilized to carry it out, according to Ng'ethe et al., (2012).

Employee recognition is defined as "the timely, informal, or formal acknowledgment of a person's or a team's behavior, effort, or business result that supports the organization's aims and values, and that has gone above and beyond customary expectations" (Ng'ethe et al., 2012). Employees respond to appreciation conveyed through acknowledgement of their good work because it shows that their effort is valued, which is a basic human need. Employees are more likely to stay with a company if they believe their abilities, efforts, and contributions to performance are recognized and valued by others. According to these data, Maertz and Griffeth (2004) highlighted competitive pay, good supervision and interpersonal relationships, job autonomy, a better working environment, training and development, and job security as the most important factors influencing employee turnover decisions. Furthermore, according to Gaiduk et al. (2009), employee retention is influenced by three primary factors: the employee's personal traits, the nature of the employee's current employment, and an appropriate work arrangement. Furthermore, according to Chew (2004), younger employees were more concerned with salary, training, and development, career promotion, difficult work, growth possibilities, and recognition than older employees. Autonomy, mentoring possibilities, and job difficulties were all important factors for older employees. Job satisfaction and organizational commitment had a considerable favorable effect on academic staff retention, according to a study of 139 academics from Jordanian University (Al- Omari et al, 2009). Aside from that, structural characteristics such faculty work environment, autonomy, communication, distributive justice, and workload were linked to intent to stay, according to Daly et al (2006). In addition, (Khalid, Irshad, & Mahmood, Job Satisfaction among Academic Staff: A Comparative Analysis, 2012)(2010) discovered that salary and tenure had an impact on academic staff retention. Role conflict, promoting prospects, and age were shown to be some of the characteristics that influenced employee intention to leave the university. These results are the result of a combination of internal and external causes. In line with these findings, Maertz et al. (2003) discovered that salary, job autonomy, working conditions, training and development

opportunities, and supervisory support are the most important drivers of university academic staff turnover intentions.

Conclusion

Based on the reviewed research studies, the following factors can be identified as the most frequently mentioned factor affecting the turnover of the university academic staff.

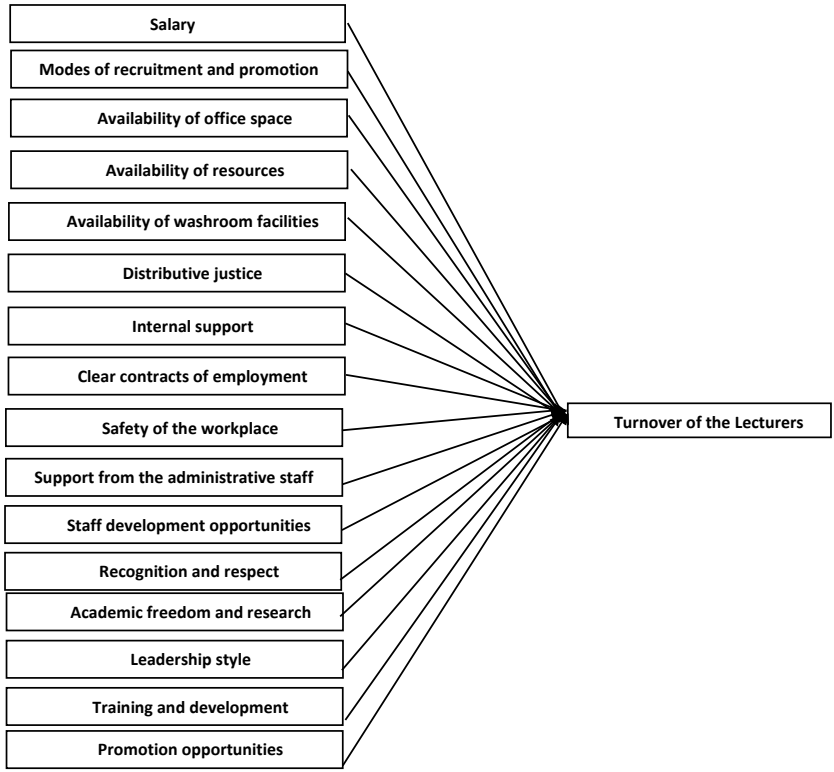

Figure 01: Frequent Factoring Model affecting the turnover of the university academic staff

Source: Developed by the Resesearchers (Deduced from Literature), 2021

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Developing an Informated Workplace: Information Communication Technology Adoption and Human Resource Management

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Abstract

Information communication technology adoption has been revolutionised the avenues in which many organisations do their business operations, making a paradigm shift for management that has caused in innovative methods to functioning business. Though, developing an informated organisation needs more than just the use of certain hardware and software. What similarly vital is the adjustment in other aspects of organisational practice (i.e. human resource management practices). Accordingly, this study examines the effect of information communication technology on human resource management functions (i.e. employee information management, employee leave management, employee performance management, and employee welfare management). Survey data were collected from 86 employees from a semi-government organisation in Sri Lanka. The results of analysis using the SPSS method found a significant positive relationship between information communication technology and human resource management practices such as employee information management, employee leave management, employee performance management, and employee welfare management. The findings confirm our predictions. Our findings also suggest that information communication technology most significantly associated with employee performance management. These positive associations also discovered the transformational capability of information communication technology supported human resource management since information communication technology may play a role in enhancing the influence of human resource management practices in an organisation. The study recommends managers to integrate the human resource management practices with information communication technology since it contributes significantly to reduce administrative financial expenses and accelerate the speed of completion of work.

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Keywords: *Employee information management, Employee leave management, Employee performance management, Employee welfare management, Information communication technology*

Introduction

Human resource management plays a significant role in every organisation, and information communication technology and human resource management influence each other to a great degree. The wide use of information communication technology within human resource management has increased rapidly over the past decade. information communication technology has created a revolution in every sphere of human endeavour. Today, information communication technology is used broadly across companies to perform various functions including recruitment, performance evaluation, employee development, reward management, etc. The information communication technology has not only impacted operations of the organisation also has made their existence greatly in every sphere of management. However, it is observed that there is a new trend which has aroused about human resource management recent past within the arrival of information communication technology. It has been a good exile to build a proper relationship between organisational performance and human resource management.

The previous studies done in this field show that organisations that can successfully implement and accept the human resource management -related technology tools, can definitely outstrip the other organisations. This leads to the transformation of the human resource management practices as well as increases the speed, efficiency, and accuracy of the human resource management functions across the organisations. This transformation of human resource management practices to technology-oriented human resource management practices will help organisations to integrate the processes and henceforth reduce the paperwork. Also, that will enable organisations to reduce the administrative costs and therefore increase the convenience of data to the employees and managers. Therefore, technological-oriented human resource management creates more impact by playing an imperative role in the accomplishment of organisational strategic objectives.

It is a policy of the Government to promote the use of information communication technology in the provision of public services in an effort to

provide such services in a more efficient and effective manner. Sri Lanka's e-government service strategies, which have taken a holistic approach, are the most extensive in the South Asian region and are aimed at advancing the people economically and developmentally (Rainford, 2006, p. 3).

In the recent past, Sri Lanka as a developing country has made its intention to use information communication technology for various fields including technology-driven human resource management practices. For example, more than 138 e-services are provided by more than 70 government agencies, according to the government's official online portal website for easy access to e-government services. Internet density in Sri Lanka has also grown rapidly from a small percentage of 4.05% to a positive value of 79.95% in the last decade (Central Bank of Sri Lanka, 2020). Meanwhile, the digital literacy of the population in Sri Lanka between the ages of 5-69; the ability to work using a desktop / laptop / tablet computer or smart phone gradually grew to 49.5% of the total population by the first half of 2020 (Department of Census and Statistics, 2021). Furthermore, in the year 2002 Sri Lankan Government, Introduced the' e-Sri Lanka' or Sri Lanka National Information and Communication Technology Strategy. Simultaneously, the Information and Communication Technology Agency was established as an institutional framework for the formulation and implementation of information communication technology strategies. The Sri Lanka National Information Technology Program, which was launched under the auspices of the institute, was a six-year program. 'IT Human Resource Capacity Development' and 'Public Sector Redesigning' are the two core elements of this program (ICTA, 2002). Accordingly, most of the semi-government organisation in Sri Lanka have been drawn their attention to developing and/or deploying information communication technology-related human resource management in their organisations. As an initial step of the whole process semi-government organisation in Sri Lanka, has taken steps to introduce human resource information system in the organisational context.

It is clear from the above that a number of initiatives have been taken over the past two decades to promote the use of information communication technology in the public sector. But in reality there is a question mark over whether it has achieved the desired result. One such instance reflects the 2016 Census of the Department of Census and Statistics on public and

semi-public sector employment. According to the analysis results of that census published in 2018, 33.2% of the total public service in Sri Lanka is not able to use a computer and 30.4% is able to use a computer but it is not used for official purposes. The proportion of computers that can use and use for work is 36.4% (Department of Census and Statistics, 2016, p. 49). This value cannot be justified as a country that has been implementing information communication technology development policies for over 18 years and as a country with long-term processes that have taken a number of measures for the use of information communication technology in the public service at high cost. According to social media and mainstream media reports, the public does not seem to have a satisfactory opinion on the quality of public services. (Seneviratne, 2017).

Furthermore, according to researcher's point of view, most of semi-government institutes has not yet succeeded with the accomplishment of objectives of the implementing of human resource information system in the organisation. For example, employees of Ceylon Electricity Board (CEB) are complaining about being delay in their annual increments (M. R. L. B. Silva, Personal Communication, February 13, 2020), large-scale trade union actions held few times based on salary anomalies. (Wickramasinghe, 2020), paying bonuses for all employees, at the same rate without any individual appraisal (CEB, 2019), anomalies and problems arising in the annual transfer process (N. A. Sirisena, Personal Communication, May 06, 2020), and failure to accurately identify training requirements. After considering all the above facts, researchers are developing a research problem as 'How does information communication technology impact on human resource management practices in semi-government organisations in Sri Lanka?'

The rest of this paper is organized as follows. The upcoming section presents the literature review, followed by the research method. The next section presents empirical results. Then, we discuss the results and provide implications of the study. The final section concludes the paper while discussing recommendations.

Literature Review

Information Communication Technology

According to Techtarget (n.d) information communication technology

can be defined as a computer-related tool for storing, retrieving, and transmitting data. However, Sohal and Ng (1998) saying by excerpting Lai and Mahapatra (1997), the term information communication technology in a broad sense as `technologies dedicated to information storage, processing and communication'. Also, this notion of information communication technology focuses on the hardware, software, telecommunication, and office equipment that transforms raw data into useful information, adding new value to the processes.

When information communication technology coming into the organisational environment, strategic information systems can support or even shape the business strategy. Furthermore, some conventional information systems become strategic when used in innovative ways (Wiseman, 1988). According to Dewett and Jones (2001), in 1991 US organisations have spent billions of US dollars on IT. In 1984, the spent amount was 80 billion US dollars and in 1998 it was about 160 billion US dollars. The meaning of this increase is that business and organisations have recognized the value of information communication technology within few years after implementing in the business world.

Human Resource Management

In the last two decades of the 19th century, it is observed that there was an increase in the "Strategic Management" of organisations in the United States and numerous models of strategic management have been proposed meantime. This interest in strategic management has resulted in various organisational functions becoming more concerned with their role in the strategic management process. human resource management has similarly sought to become integrated into the strategic management process through the development of a new discipline referred to as strategic human resource management (Wright & McMahan, 1992).

According to Opatha (2009), human resource management can be defined as the efficient and effective utilisation of existing human resources in order to achieve the objectives of a specific organisation. However, Management study guide (n.d) has defined human resource management in two ways. Firstly, human resource management is the process of managing the people in the organisation in a structured and holistic manner. Secondly, human resource management is the process

of managing the people in the organisation from a macro perspective. But, Armstrong (2006) has stated that human resources management can be defined as a strategic and coherent approach to the management of an organisation's most valued resource–the people who work there individually and collectively contribute to the achievement of its objectives. Human resources is primarily concerned with how people are managed within organisations, focusing on the policies and systems (Collings & Wood, 2009).

Human Resource Management with Information Communication Technology

Information communication technology has become an essential part of the modern world. Within this highly competitive business world, the necessity of information communication technology for various fields like finance management, material management, human resource management, etc. is highly demanded. According to Aggarwal and Kapoor (2012) the revolution information communication technology is entirely and rapidly redefining the way things are done in nearly every field of human activity. Human resources and information communication technology are two elements that many firms are looking to utilize as strategic weapons to compete. Information systems specially developed for human resource management are referred to as human resource information system.

The human resource information system is a process that utilizes information communication technology for the effective management of human resource functions and applications. It is a computerized system typically comprising a database or inter-related database that tracks employees and their employment-specific information (Gill & Johnson, 2010). It can be briefly defined as integrated systems used to gather, store and analyse information regarding an organisation's human resources (Hendrickson, 2003).

human resource information system provides human resource professionals with opportunities to enhance their contribution to the strategic direction of the firm, First, by automating and devolving many routine human resource tasks to the line management, human resource information system provides human resource professionals with the

time needed to direct their attention towards more business-critical and strategic level tasks, such as leadership development and talent management (Lengnick et al., 2003).

Aggarwal and Kapoor (2012) are stated few major advantages of human resource information system by excerpting Kovach (2002) as follows. They are; increase competitiveness by improving human resource operations, ability to implement a number of different operators to human resource, shift the focus from the operational (transaction) human resource information to strategic human resource information, include employees as an active part of the human resource information system, and re-engineering the entire human resource department.

Theoretical Background and Development of Hypotheses

According to Saha and Majumder (2017) information communication technology is used for identifying the parameters of performance and quoting them very clearly. By the implementation, the performance standard can be set for performance management. information communication technology helps for identifying competencies and competency gaps that contribute/ hinder performance and recognising and promoting performance culture. Therefore, the first hypothesis developed as,

> *Hypothesis 1: Information communication technology has a positive impact on employee performance management.*

Empxtrack (2009) has mentioned that maintaining compliance or managing leave data can be difficult when done manually or by using excel. human resource management technology can significantly simplify leave management and add value by streamlining the organisation's leave data. Therefore, the second hypothesis developed as,

> *Hypothesis 2: Information communication technology has a positive impact on employee leave management.*

Data such as names, titles, addresses, and salaries are a basic start. In an ideal system, you can allow employees to look up and review their own information, including vacation tracking. Complete integration with

payroll and other company financial software and accounting systems (Snovasys, n.d). Therefore, the third hypothesis developed as,

> *Hypothesis 3: Information communication technology has a positive impact on employee information management.*

According to Adam (2015), employers who want to keep employee benefits packages in an effective, competitive, and cost-effective manner are increasingly turning to technical solutions. Accordingly, with the help of Vendors, companies are able to meet their organisations' unique employee benefit requirements. That means organisations have a good intention to use information communication technology for employee welfare. Therefore, the fourth hypothesis developed as,

> *Hypothesis 4: Information communication technology has a positive impact on employee welfare management.*

The conceptual framework of this study is illustrated in Figure 1.

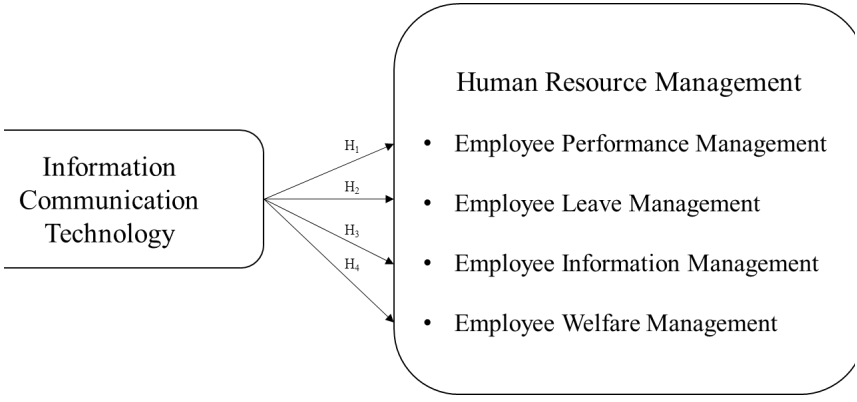

Figure 1 Conceptual framework

Research Methodology

We collected data through self-administered questionnaires in Sinhala. Using stratified and simple random sampling, 100 questionnaires were distributed as hard copies and soft copies among every level employee from the project division of a semi-government organisations in Sri Lanka. Out of the 100 questionnaires, 92 questionnaires were returned,

and of these, 06 questionnaires were incomplete. Therefore, only 86 questionnaires (final response rate of 86%) were used for the analysis.

Results

Sample description

Out of 86 respondents, 70% were males. Under the age category, 56% belonged to the 31-40 age category. With regard to service period, 35% have 05-10 years of service. 28% have obtained a bachelor's degree. Regarding the nature of work, more than 29% belongs to clerical and allied services and 21% belongs to middle-level technical grades. With regard to the division of the employees, more than 45% belongs to engineering/technical service.

Data analysis

The research model of the present study was tested and SPSS 23.0 software was used for the analysis. Next to the demographic data analysis, the research moved to the analysis of relationships between information communication technology and each human resource management function currently using information communication technology in the semi-government organisations. They were presented in Table 1, Table 2, Table 3, and Table 4 respectively.

Table 1: Pearson's correlation between Information Communication Technology and Performance Evaluation

Correlations

		Information Communication Technology	Performance Evaluation
Information Communication Technology	Pearson Correlation	1	.635**
	Sig. (2-tailed)		.000
	N	85	84
Performance Evaluation	Pearson Correlation	.635**	1
	Sig. (2-tailed)	.000	
	N	84	85

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data

According to the results presented in Table 1, Pearson's correlation coefficient between information communication technology and performance evaluation, there is a moderately strong positive correlation can be seen ($p<0.05$). Further, this proves the finding of a positive relationship between information communication technology and performance evaluation at a 99% significant level.

Table 2: Pearson's correlation between Information Communication Technology and Leave Management

Correlations

		Information Communication Technology	Leave Management
Information Communication Technology	Pearson Correlation	1	.333**
	Sig. (2-tailed)		.002
	N	85	85
Leave Management	Pearson Correlation	.333**	1
	Sig. (2-tailed)	.002	
	N	85	86

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data

According to the results presented in Table 2, Pearson's correlation coefficient between information communication technology and leave management, it was 99% confident that the correlation is a moderately poor positive correlation between information communication technology and leave management ($p=0.333$).

Table 3: Pearson's correlation between Information Communication Technology and Employee Information Management

Correlations

		Information Communication Technology	Information Management
Information Communication Technology	Pearson Correlation	1	.246*
	Sig. (2-tailed)		.023
	N	85	85
Information Management	Pearson Correlation	.246*	1
	Sig. (2-tailed)	.023	
	N	85	86

* Correlation is significant at the 0.05 level (2-tailed).

Source: Survey Data

As per the results presented in Table 3, Pearson's correlation coefficient between information communication technology and employee information management, there is a 95% confidence that the correlation is a moderately week positive combination between them. P value was 0.246.

Table 4: Pearson's correlation between Information Communication Technology and Welfare Management

Correlations

		Information Communication Technology	Welfare Management
Information Communication Technology	Pearson Correlation	1	.359**
	Sig. (2-tailed)		.001
	N	85	85

Welfare Management	Pearson Correlation	.359**	1
	Sig. (2-tailed)	.001	
	N	85	86

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data

According to the results presented in Table 4, Pearson's correlation coefficient between information communication technology and welfare management, there was 99% confidence can be seen that the correlation is a moderately week positive one. 0.246 of 'p' value was notified.

Recommendations

Based on the finding of the study, the following recommendations were made which could minimize the practical problems and other issues in semi-government organisations in Sri Lanka. Focusing on using information communication technology for human resource management, since it is financially advantageous as well as significantly increase the efficiency of human resources, Make necessary arrangements to develop the current level of information communication technology used in the organisation, Study the other areas that can use information communication technology beyond the current level, Provide training to the employees of the organisation regarding software and other tools, Focus on making the software interface more user-friendly, Identify flaws in software and work to correct them, Focus on introducing a system that can be easily accessed from anywhere, such as offices, workplaces, power plants, etc. with computer equipment/ tools or software.

Further to that it is important to increasing information and communication technology education in school education. Also it is important to redesigning office systems since some government-used office systems date back to British colonial times and they were created during the civil service. Without having proper infrastructure facilities, it is difficult to carry out services in any organisation. Therefore, Sri Lankan government should pay their attention to the improvement of information and communication technology infrastructure facilities.

The COVID-19 epidemic, which is currently a major crisis in the country, has prompted government officials to order work from home several times. That methodology has failed to achieve the expected results. The main reason for the that was, majority of officers did not have personal information and communication technology infrastructure. Therefore, government should create ways and means to providing of facilities for government officials to acquire information and communication technology infrastructure. Also, there is no mechanism in Sri Lanka to evaluate officers who have excelled in their duties through information and communication technology in the public service. Accordingly, it is important to develop such mechanism to recognize those individuals since it may cause to develop individual's motivation towards the use of information and communication technology to perform their duties and responsibilities.

Conclusion

By confirming our predictions, our findings suggest that information communication technology is most significantly associated with employee performance management. These positive associations also revealed the transformational potential of information communication technology supported human resource management since information communication technology may play a role in enhancing the importance of human resource management practices in an organisation.

The use of information communication technology for human resource management functions is always having a positive pattern. Therefore, the correctness of the actions taken by the modern organisational world is being strongly proofed in the field. Organisations can possibly gain that extraordinary advantage by using proper information communication technology tools for managing their human resource. However, according to the results given by the research, all the assumptions made by the researchers were saturated and the necessity of information communication technology for human resource management is strongly recognized furthermore.

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An Untapped Human Resource in the Time of Crisis: Significance of Social Work Interventions in Managing COVID-19

Thilanka WAS*

Abstract

Covid-19 is known as a disease caused by a virus that turned to be a pandemic. An infected local individual of this virus was initially reported in Sri Lanka on 2nd week of March, 2020. Since then, the virus has started spreading at different degrees throughout the country with the span of time. Currently, Sri Lanka is facing the 3rd wave of the pandemic which is more critical. Yet, the mechanism of managing the associated challenges of COVID-19 is questionable and seemed to be ineffective. In this backdrop, this conceptual paper posits that the government should take the professional involvement of social workers which adopts a versatile, multidisciplinary approach in addressing community issues. Social work is a profession well informed with socio- psychological, behavioral and clinical aspects of community life. The nature of spread of COVID-19 reflects that understanding local realities of communities holds an utter significance in responding to rising rate of infected people. The magnitude of potential involvement of a social worker in managing challenges of COVID-19 expands from prevention of infectious behavior to coping with psychological trauma caused by sudden demise of the closed ones of those who are unable to relieve the grievances through local rituals. Further, the apparent ineffectiveness or rising criticisms for the prevailing disease management mechanism alarms the mismatch between community dynamics and the professional code of conduct of those who are already engaged with the mechanism. Particularly, the medical professionals and the military involvement along with the political mafia have been criticized for not being able to address ground realities of people vulnerable to COVID-19. In this scenario, social work interventions at micro, mezzo and macro level remain as an untapped human resource intervention that needs to be recognized and involved in

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managing the challenges of COVID-19 Pandemic in Sri Lanka.

Keywords: *Local Reality, Multidisciplinary approach, Pandemic, Psychological Trauma*

Introduction

A pandemic is the worldwide spread of a new disease. The World Health Organization (WHO) is responsible for declaring when a global influenza pandemic is occurring. The WHO does this by monitoring outbreaks of a disease and taking advice from international health experts (Healthdirect Australia, 2020). Coronavirus disease (COVID-19) is claimed as a pandemic invaded the globe unprecedently fast. It is an infectious disease caused by a newly discovered coronavirus. People can catch COVID-19 from others who have the virus. The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. Even contacting the droplets that have been landed and remaining on objects can make the contactors infected (World Health Organization, 2021). In the context of Sri Lanka, 280,543 of total infected cases have been reported while 3,000+ deaths have been reported by the mid July, 2021 (Official Website for Sri Lanka's Response to COVID-19, 2021).

Specially, at a situation which Sri Lanka has been downgraded as a lower middle income country according to the World Bank's income classifications, COVID-19 poses a serious challenge to the socio-economic and political aspects of the country due to its nature of spreading. World Bank uses the Gross national income (GNI) of the previous year (2019 in this case) in classification. Thus, the GNI numbers that are used for 2020 classification do not reflect the impact of COVID-19 (Serajuddin & Hamadeh, 2020). This implies the obvious fact that the country's profile is further downgraded by 2021 due to the serious cost charges by the national COVID-19 management mechanism. The negative repercussion of COVID-19 are rising with the growing pattern of virus spread. While generating unbearable economic challenges, it influences not only to economic aspects but in general, to socio- political and cultural aspects of the nation too. Rectifiability of these consequences remain disputed and questionable while it urges multidisciplinary professionals to explore potential and effective interventions in managing the COVID-19 crisis.

The crisis expands its impacts ranging from micro scale to macro scale. While discussing the national level impact of the pandemic, a successful crisis management and intervention mechanism necessitate understanding the community and individual/ household level dynamics and impacts. Multifaceted problems in relation to the COVID-19 pandemic do not fit gracefully within the purview of individual organizations and institutions. Prevention, risk mitigation, control, coping, recovery and resilience through networks of collaborating and diverse entities provide a means of addressing the problems due to the flexibility of networks, adaptability, and capability of mobilizing diverse resources. Based on this, the paper discusses the on-going COVID-19 crisis management mechanism in the Sri Lanka context with a special reference to the professional interventions of diverse entities. Currently prevailing professional interventions are critically analyzed while signifying the incorporation of the professional intervention of social workers that yet remain as an untapped human resource in managing the COVID-19 crisis in the local context.

Crisis of Crisis Response Mechanism in Sri Lanka during COVID-19

A crisis is "a phase of disorder in the development of a person, an organization, a community, an ecosystem, a business sector, or a polity" (Boin, 2017, as cited in Macnamara, 2021). Sociological studies also examine crises through a wider lens, focusing on risks to individuals, groups, communities, or social systems and society as a whole. In this terms, COVID-19 is a crisis contagion that has affected Sri Lanka in national, community and individual levels. While closely looking at the impacts of it in each of these levels, it can be unarguably agreed that the national economy and polity has been largely endangered. The welfare facilities of the state have been neutralized or deactivated while requiring the health sector to trigger its services in a velocity. Communities are experiencing loss of livelihoods, community interactions and increased vulnerability of their health and wellbeing. Also, the COVID-19 effects have widened the social inequalities in different aspects. In the micro level, individuals are at a greater stress as a consequence of extreme fear and uncertainty, restricted mobility, sudden demises or fear of demises of loved ones. All these negative impacts are intertwined that has a top bottom flow with an increased severity. Considering the crisis response, there are various progressive approaches suggested by scholars to crisis coordination such as promoting a network centered approach instead of

top down, pre-crisis familiarity and solid information communication to enhance coordination. These approaches propose technological and organizational adjustments to enhance the inter-organizational response of crisis response teams (Kalkman et al., 2018).

Crisis situations are defined by three elements: a threat to a community, uncertainty about the nature of the crisis and an urgent need to respond (Boin,'t Hart, Stern, & Sundelius, 2005, as cited in Macnamara, 2021). When investigating the COVID-19 crisis management in Sri Lanka, it can be seen that bureau political structures and their procedures are manipulating the above said elements. A disaster may also affect public opinion about the government, for instance, citizens have their opinion on how the government handles the disaster (Albrecht, 2017, as cited in Mahees, 2021). This background induces politicization of decisions taken by the bureau political structures in managing any disaster/ crisis.

This condition is clearly reflected in the COVID-19 crisis management mechanism of the government of Sri Lanka. The state accountability in COVID-19 crisis management and risk mitigation was glorified in political terms when the first wave was successfully managed. It is further noticeable that bureau political entities influence in constructing and deconstructing the public opinion on the severity of the crisis time to time. Specially, media was used according to these political agendas. The politics behind crisis management came in to a major play when the 2020 Sri Lankan parliamentary elections was held for the sake of defending democracy amid the covid-19 pandemic. According to Mahees (2021), it was also revealed that politically sensitive issues of the country are usually disarticulated by using the corona pandemic and its spreading trends. Sometimes, the pandemic is used as the political shield against other social problems that emerge in the country. It is also used as a leading political manifesto during election times. Both ruling and opposition parties made their political slogans based on the loss and gains of COVID management strategies. From awareness raising to statistical revelation of the infected cases, it carries a political implication that affects the political opinion among public. Mahees further stresses this stating that the pandemic became the political platform for almost all the hard and soft power relationships of Sri Lanka in the recent past.

Apart from that, considerable number of instances on how the quarantine law was imposed witness discriminatory practices adopted when treating general public and elite figures before the law. Specially, there is a growing consensus that the quarantine law is misused as same as the emergency law that existed during war period was known to be. The way of implementation of response mechanisms such as lock down, individual/ community isolation, quarantine poses a serious question on human autonomy over their life and survival. The application of these laws and regulations were far beyond the ground realities of people living in dynamic communities which worsens the vulnerabilities they were experiencing. Mahees (2021) makes an interesting analysis indicating the connection between power and the human body in order to analyze the political impact of COVID 19 in Sri Lanka. The corona pandemic is being used as a mode of social control or mechanism of regulating human behavior in the world. He further draws the idea of bio-power which implies the meaning of power over life presented by Michel Foucault (1995). He stresses that bio-power is strategies and mechanisms by which human life processes are managed under regimes of authority over knowledge, power, and the processes of subjectivities. Even though it is undeniable that the regular life is impossible to be allowed under the COVID-19 crisis, decision making and intervention mechanisms were manifestly political and dominating the crisis management mechanism.

To prevent a failing crisis response, organizations need to negotiate collective decisions despite their divergent views and interests in order to "build a response system that can reach across boundaries and bring together available capacities in an effective and timely manner" (Ansell et al., 2010, cited in Kalkman et al., 2018). This task is often attributed to liaisons. In the case of COVID-19 management, human resource management of different professionals with multidisciplinary backgrounds can be analyzed in the light of liaisons. Just as in any other context in the globe, the foremost responsibility is inevitably kept on the hands of the medical professionals in treatment process. Scientific and orthodox medical professionals were dominating the discourse on pandemic in the Sri Lankan context just as anywhere in the globe while some indigenous medical practitioners attempted to come up with

certain treatments were apparently denied or/ and demised due to many scientific and political economic reasons . There are certain instances where respective medical authorizes were having confronting opinions with the political decisions on imposing lock downs, curfew and travel bans when such decisions were set as political decisions than actions taken for the best interest of the people. Yet, medical professionals were in frontline combatting the pandemic while prevention and spread control interventions including quarantine process were majorly led by the military officers in the Sri Lankan context.

Militarization of COVID-19 management can be seen across the globe. As Kalkman (2020) draws examples, powerful countries like China, France and South Korea have witnessed the immense militarization of COVID-19 crisis management. He questions, "If there is an 'enemy' to be 'ought' in 'battle' or 'war', which organization would be better suited to take the lead than the military? It is true that, with operational readiness of working under stressful situations and well preparedness, military forces fit well with the need of the COVID-19 response mechanism. Also, as Kalkman (2020) continues to justify, pointing out that the armed forces have vast resources and developed expertise to work under pressure; its way of operating - hierarchical and top-down, resulting in fast decision-making overcoming delays through cutting red tape and democratic civilian control which refers to the situation in which a (democratically elected) government is ultimately in charge over its armed forces ensures the crisis response mechanism is more effective and lawful. Sri Lankan military forces have demonstrated the operational and resource capacity of military forces in managing the crisis. Yet, the lawfulness and military-civilian collaboration has been conflictual and controversial in implementation. Specially, the involvement of police service has produced antagonistic opinions and responses among public due to its way of responding to people in their operations.

Bridging the Gap in COVID-19 Crisis Response Mechanism

It is obvious that more or less, the orthodox medical practitioners, military and police officers are superseding the crisis management. Such a limited network of liaison among professional organizational bodies have contributed considerably in responding the COVID-19 crisis. There is no intention of undermining the current success of their

interventions. Despite the current achievements, the human life has been adversely affected as the sensitive areas of human social life has been neglected in the mission of COVID-19 prevention. The contemporary liaison indicates an obvious absence of involvement of the professionals from social work who have expertized understanding in responding to community dynamics at ground level dealing with day today socio-economic and cultural realities of people. Specially, the psycho-social wellbeing and socio-economic realities of people need to be well focused and further considered in ensuring crisis risk reduction and resilience if the COVID-19 crisis management to be well balanced. In that backdrop, paper suggests that the gap should be bridged by incorporating social work professionals in crisis management mechanism.

"Social work is a practice-based profession and an academic discipline that promotes social change and development, social cohesion, and the empowerment and liberation of people. Principles of social justice, human rights, collective responsibility and respect for diversities are central to social work. Underpinned by theories of social work, social sciences, humanities and indigenous knowledge, social work engages people and structures to address life challenges and enhance wellbeing" (The International Federation of Social Workers (IFSW), 2012). This definition provides a broad understanding about the objectives; intervention methods and techniques and the ethics of social work. Social work is a helping process which look forward for a positive social change. Basically, social workers are playing many roles in their human service providing such as a case manager, advocator, educator, counselor, risk assessor, mediator, researcher, group leader/ facilitator etc. Social Work is a versatile profession which involves specific intervention mechanisms mainly at three levels; micro level, mezzo level and the macro level. Micro level focuses on individuals/ households. Mezzo interventions are done at community level while macro level makes nation level advocacy and policy interventions. These three levels are intertwined and interventions at any level would benefit the entire society in the long run.

COVID-19 as a crisis situation which affected all three levels immensely has a call for social work interventions in order to manage the crisis situation. The COVID-19 pandemic has had a direct impact on social work responses, including social services users, social workers, and

other professionals, among other aspects. International social work organizations have mobilized efforts to respond to urgent social needs, demonstrating the values underlying the discipline (Redondo-Sama et al., 2020). According to IFSW (2021), key functions of social work at this time include; ensuring that the most vulnerable are included in planning and response; organizing communities to ensure that essentials such as food and clean water are available; advocating within social services and in policy environments that services adapt, remain open and proactive in supporting communities and vulnerable populations; facilitating physical distancing and social solidarity. Further, as a profession, advocating for the advancement and strengthening of health and social services as an essential protection against the virus, inequality and the consequent social and economic challenges remain prominent. In the global context, there have been reported cases where social workers are supporting the communities and individuals to cope with the crisis and to mitigate the risk successfully. IFSW (2020), elaborates examples from countries like Africa, South Sudan, Latin America and Italy where social workers' interventions at community level has made a greater impact on prevention and risk mitigation of the COVID-19 crisis. One such successful instance is reported in a huge Jewi camp in the Gambella region, South Sudan where no single case of COVID-19 among the 60,000 inhabitants of the camp is reported within first six months of the pandemic outbreak when the knowledge and understanding throughout the globe was so little. It's a great achievement of the remote case management and psychological first aid support provided by the social workers who were working in the camp. Six months into the global pandemic, Africa's community-based response is one of many positive examples of social work's impact, with workers helping build systems of informal education and support within communities where there is little in the way of state social or health services. Similarly, there are ample examples given in 'The Social Work Response to COVID-19 -Six Months On: Championing changes in services and preparing for long-term consequences' by IFSW. These global evidences witness the significance of social work intervention in managing the pandemic and sensitizing communities about the nature of the pandemic.

Looking at the Sri Lankan context, social work professionals are rarely identified as a source of human resource in crisis management. Yet,

social work possess the expertized practice and knowledge in working with the neediest people in such situations. Specially, educating about the pandemic and precautionary behaviours and mobilizing communities to mitigate risk behaviours, facilitating communities in accessing required services and resources during the crisis, capacitating people to cooperate with psycho-social challenges, advocating for social justice and equal access to facilities by influencing the decision making and policy planning, empowering communities to build back better and to cope with the post crisis trauma are few important areas where social workers can be intervened. Significance of such a role is none other than the unique principles of social work in working with the service users. Their language of intervention is more local and indigenous which does not appear to be alien to the community life.

Social work is no way a hierarchical power relationship. It is a helping process depends on a contracted power where social worker is granted with the power by the service users. Therefore, power implications in a social worker-servicer user relationship is rather convenient individuals or communities who receive the service. It does not exercise a professional authority over service user's life. In fact, social work fundamentally believes that the service user is the expert by experience of their own life realities. The impact of the COVID-19 pandemic in social service users is linked to the reality faced by vulnerable groups, which may require social work interventions to improve their wellbeing and living conditions (Redondo-Sama et al., 2020). This fundamental principle enables social workers to empower communities to explore potentials within than outside to cope with crisis situations. Such intervention is rather effective than forcing people to adhere to unfamiliar concepts in a crisis situation which makes the community life more vulnerable and uncomfortable. COVID-19 management in the Sri Lankan context reflected a serious issue in getting the public adhered to the regulations introduced by the government and health authorities. From a social work perspective, it can be analyzed that the behavioural changes suggested were forced to communities with a set of technical jargons that sounded so unacquainted. Indeed, most of these practices sounded alien were embedded in the cultural context of Sri Lankan communities. Specially, the practice of quarantine, self-isolation, and sanitization were culturally practiced as a part of community life when people are

infected with communicable diseases such as chickenpox, measles and mumps. Elsewhere in the world, cultural factors, previous experiences of national crises, and the varied approaches of national governments, have all influenced social work responses. One best example from the globe is Ethiopia's coordinated response of social workers informed by the African countries' community-based responses to the Ebola outbreak in 2014-16. Most top-down strategies to arrest an infectious disease will likely ignore the often robust social groups and knowledge that already exist in many settings (Corburn et al., 2020). But, the unique bottom up approach of social work profession in identifying the community practices and ground realities in interventions mark a significant note on how far social work intervention is necessary in crisis response mechanism in the local context.

Further, social work encourages inclusion and active participation of service users in policy planning and implementation that affect their lives directly. When people's voice is heard and represented in policies, there is a high tendency that they adhere to the regulations due to the sense of belongingness. This is further explained by Cueto (2004, as cited in Rifkin, 2014) with a special reference to the community participation in health outcomes which best fit in understanding the COVID-19 health crisis. According to Cueto, (a) people will be more supportive of health services if they have been involved in decisions about how services are delivered thus promoting sustainability. (b) People will provide resources to contribute to health improvements in their community. (c) People will change risky health behaviours when they have been involved in decisions about change. (d) People will be empowered by gaining opportunities for knowledge, skills and confidence by being involved in community health. Social workers appear as an ideal mean of taking the voices of communities to the macro level policy making bodies as they are exercising innovative ways of reaching people in crisis situations like this. The nature of methods deployed in social work poses no hard and fast framework in its engagement. Social work allows professionals to be flexible and creative in making interventions. Thus, unlike any other profession, social workers are potential in inventing context specific methods to hear the voices of the deprived in communities due to crisis.

Further, Sri Lanka witnesses broadened social inequality as an impact

of the COVID-19. Most of the people from poor settlements, daily wage earners in the informal sector, labors working in the garment factories who are already experiencing some sort of a social exclusion or marginalization are victimized of COVID_19 outbreak. In the latest waves of COVID-19 outbreaks in Sri Lanka, it was observed that communities which recorded the highest number of infected cases are from above mentioned disadvanged communities. The statistics still depicts that the new varieties of the virus are mostly found in such communities. In general, as Corburn et al. (2020) also suggests, the informal settlements of the Global South are the least prepared for the pandemic of COVID-19 since basic needs such as water, toilets, sewers, drainage, waste collection, and secure and adequate housing are already in short supply or non-existent. Further, space constraints, violence, and overcrowding in slums make physical distancing and self-quarantine impractical, and the rapid spread of an infection highly likely. Residents of informal settlements are also economically vulnerable during any COVID-19 responses. Any responses to COVID-19 that do not recognize these realities will further jeopardize the survival of large segments of the urban population. Social workers who are mainly working with such communities are mandated to assess the risk and to mitigate its impact, and to advocate for the rights of people in those communities as mentioned above in crisis situations. This is again emphasizes the competency of social work to reach the vulnerable communities that are not approached or hard to approach by other professions. Specially, the cases of stigmatization of those who were infected in different clusters can be better handled if the forceful, embarrassing arrests were avoided that offended the people who were found to be infected in clusters. Social work mainly works for deconstructing such stigmas and discourage the victim blame approach that double penalize the people.

A successful crisis response mechanism requires not only pre preparedness and management during crisis but the post crisis management and resilience too. Specially, COVID-19 pandemic creates a greater post crisis trauma among people who are both directly victimized and passive victimized too. The pandemic results in unexpected phobia and uncertainty among people. Specially, the sudden demises are so common and unfortunately, own families and close relatives get no chance of paying their last respects to the loved ones. Some ethnic minorities were facing

cultural shocks as it was recommended by the government to cremate the dead bodies of virus infected people against their cultural beliefs. Thus, people are left with an unresolved grief for not being able to perform the last rituals that has psychological connotations of consoling the minds. Apart from this, obsessive compulsive disorders are intensified while depression and anxiety goes up at a rapid rate during the pandemic. Sri Lankan people, being used to a community life are experiencing serious traumatic situation due to pandemic. According to Gamlath (2019), in such a complex socio-cultural situations, the professional social work engagement in accurate screening and initial assessment of the clients presenting issues becomes a daunting task. Therefore, at the initial stage of engagement with the client, understanding the client's emotional world and sentimental attachments becomes extremely helpful. The practitioners needs to be competent enough to choose and apply the most relevant tools to understand the origin of the client 'where the client is coming from', 'the sentimental self-concept' that the client is attached to in which the social workers are well versed unlike any other profession. In the background of no proper closure can be obtained to the trauma, social work informs post traumatic growth that challenges the negative connotations aligned with the trauma. Social work is a trauma informed profession as the service users who seek support of social workers are mostly coming with traumatic experiences. Hence, social workers can intervene in supporting to change the life philosophy and spiritual ideologies of people that would empower them to see the potentials of the crisis to build back better with a greater resiliency.

Conclusion

Social work profession adopts a strengths perspective which views the individuals and communities as potential entities of overcoming challenging situations. Focusing only on problems and deficits tends to discourage professionals and clients alike. Saleebey (2006) notes that despite the difficulties clients may have experienced, they have also developed many skills and attributes that have helped them to meet and overcome difficult challenges. People often exhibit remarkable resiliency in the face of adversity. The belief in inherent strengths focuses on identifying and mobilizing the resources and assets, respecting the inherent wisdom, and knowledge that every person has, and leads to a re-discovery of these resources within the environment in which they

live (Pulla, 2017). This basic assumption in strengths perspective gives a hope to a social worker to look for positive social change. Adopting a strengths-based approach does not necessitate ignoring weaknesses. It has been established as an empowering alternative to traditional human resource management methodologies that describes or diagnoses human problems in terms of deficits.

Navigating the shift in professional practices in strength perspective is challenging. It is further puzzling when the recognition for the professional social work has not yet been well established while aforementioned medical and military professionals are dominating the crisis management mechanism during COVID-19 pandemic in the context of Sri Lanka. Yet, the social workers' intervention that is based on basic ethics such as social equality and justice, empathy, ensuring privacy and confidentiality, respect to diversity and acceptance, and being non-judgmental with a view to ensure inclusion are largely required by the contemporary COVID-19 management mechanism.

All current professional interventions are seemingly makes the communities dependent on their services. This would deny the autonomy and self-sustenance of communities in dealing with the potentially similar crises in future as well the current crisis. Such interventions leads to a dilemma of coping and resilience. Nevertheless, cooperation of social with current professional interventions can better advance the understanding of what the communities need the most and to empower them to face the COVID-19 pandemic better. Such empowerment is multidimensional, taking place in sociological, psychological, economic, political, and other dimensions. Community-level empowerment "challenges professional relationships to communities, emphasizing partnership and collaboration rather than a top-down approach" (Wallerstein, 2002). Consequently, social work professionals who remain to be an untapped human resource in COVID-19 crisis management mechanism in Sri Lanka strive to make professional interventions that rebalances the power structures by empowering the affected communities to gain the power over the process of enabling their social settings to increase control over their lives.

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Impact of the COVID-19 on Venture Capital in Small and Medium-sized Enterprises- Critical Perspective

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Abstract

The COVID-19 pandemic has dramatically remodeled the country's economy toward small and medium-sized enterprises, the economic growth of each developing country is now mostly influenced by small and medium-sized enterprises (SME). Supporting SMEs, is one of the most important driving forces in developing the country's economy to accelerate growth and become self-sufficient. Venture capital is the main source of equity for SMEs as a start-up business. This study explores how SMEs and venture capital have been halted by the COVID-19 pandemic. This study has further highlighted the practical implications of venture capital in the crisis. The methodological tool of the research method is a descriptive analysis that was conducted without empirical study. The main aim of the study is to investigate venture capital impacts for small and medium-sized enterprises from the COVID-19 perspective. This paper will include the following logical sequence: introduction, literature review, methodology, changes in venture capital investment, the new dimension model in venture capital investment, and the conclusion of the study. The outcome of the study can enlighten the existing literature review in venture capital of small and medium-sized enterprises. However, the COVID-19 pandemic has created financial distance between SMEs and investors, and the seed capital for SMEs have also been affected due to uncertainty. The result of the study can be useful to provide significant implications and insights into the venture capital and the SMEs from the COVID-19 perspective. Finally, the future study will explore to develop a resiliency model to venture capital for SMEs.

Keywords:*COVID-19, Small and medium-sized enterprises, and Venture capital.*

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Introduction

Venture Capital (VC) has made great progress in changes globally where small and medium-sized enterprises are desperately looking for finance to launch the business. The small and medium business is the backbone of any economy in the world, thus the increase in venture capital investment is the most welcoming sign for the business community. Currently, VCs look more like financial institutions, but they're using invested knowledge and operational know-how as capital. In this context, venture capital is not a long-term investment, but the idea of investing in a particular entity to expand the business, and once the business reaches a matured stage, it can continue to exist with the help from investing in financial institutions. COVID-19 has created a financial distance between SMEs and investors. The startup or seed capital for SMEs has also been affected due to uncertainty. Global Pandemic impacts a decrease of 60% of the total volume of investment raised between quarter 1 in 2019 and quarter 1 in 2020 (Brown & Rocha, 2020). Overall, Venture Capitalist (VCs) has to monitor the business environment and be more proactive in strategic planning for managing the uncertainty of the business. The innovation of young companies depends on the continuous inflow of venture capital, but it has been halted by the COVID-19. The international venture capital market has been completely locked down. Each country is keen to develop its own self-sufficient economy since the borders are closed. SMEs are idealistic businesses to be started, however this has been postponed for an indefinite period due to the lack of investors in the financial market.

Small and medium enterprises (SME) focused funds and accelerators will experience performance deterioration and harder fundraising (Strusani, Verma, & Manent, 2020). The Venture Capital investors are from families or of people with high net and less for institutionalized investors. The growth of SMEs has been affected in short and medium terms due to a decline in revenue and profitability. Most SMEs do not have to service entertain debt and increase borrowing cost, adding to the high-risk aversion that will lead to defaults and liquidation. The entire global value chains have been challenged by the pandemic. The Venture Capital investment can create more opportunities in relation to technology, transfer know-how, innovation, digitization, and increase operational capabilities into SME investment. More debate on the impact

of COVID-19 has thus far centered on existing SMEs (Bartik et al.,2020). This article examines how COVID-19 has impacted venture capital in Small and Medium-sized enterprises.

The following way of venture capital works in the corporate world (Figure:1).

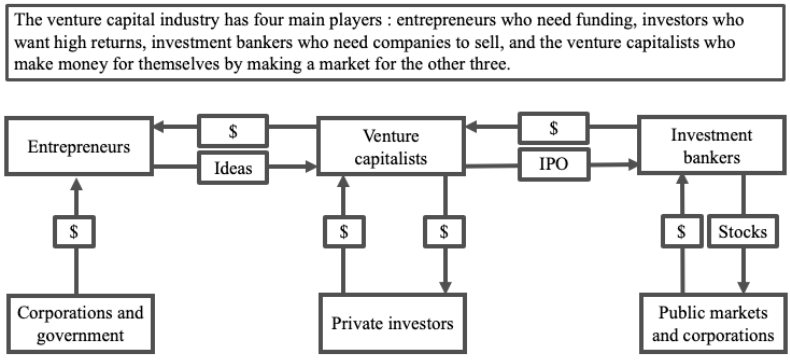

Figure:1 How the Venture Capital works in the financial market

Literature View

The venture capital has declined due to COVID-19 VCs are working on extra time to monitor and evaluate the existing portfolio (Jones , 2020). In this context, VCs have been involved in the business operations to reduce costs, focus on cash, redesign the business model, and raise additional funding toward financing the working capital requirements. The investor's portfolio in the venture capital has been deteriorating dramatically. The stock market is also halted by the COVID-19, and the market has faced tough times, so the company cannot issue the initial public offer (IPO) to the public to raise additional funding for the business.

The business activities are entering a recession and there are more possible signs of recovery, though risks still remain significant (Blee, 2020). Ulrike Hinrichs (2020) stated that "demand for venture capital should not drop noticeably because of the pandemic. The pandemic has created more business opportunities for technology innovation, so that venture capital can finance to start up new business. The challenge will always be in the business environment to start up new business venture.

Venture capital investments are more toward the new idea generation and innovation businesses (Schweickhardt, 2020).

Technology Companies are more resilient businesses, however there is high risk involved. Venture capital has become a scarce resource in the present business environment. Sri Lanka is directed toward many innovations and methodologies in the capital market and digitalization of the business that will benefit both parties such as the investors and issuers. SMEs can reduce inequality among the society and enhance the economic growth of the country (Lambert , 2017). The investors and entrepreneurs shall align together for the best interests in the venture capital market.

The top brand companies such as Amazon, Apple, Facebook, Google, Intel and Microsoft started with the support of venture capital at the early stage of their businesses. All the companies are developed with innovative ideas on the market (Gompers , Gornall , Kaplan , & Steven, et al.2021). Venture capital shall be a key element for economic value. Venture capital is considered as a viable financial model with the proficiency of escalating access to finance for the SMEs growth. Venture Capital is an alternative source of financing, equity and fulfills the gap generated in the financial market by conventional lending institutions.

Venture capital assists in financing the innovation and creativity of businesses, the academics and practitioners which has drawn more attention. The impact of the COVID-19 in venture capital on small and medium enterprises is three times higher than the global financial crisis (Block and Sandner, 2009). VCs have described "COVID-19 as the Black Swan of 2020 and the global VC market was completely locked up". In this context, the pandemic has changed VC perception and attitude in the global business environment.

Methodology and Research Methods

The research objective is on the impact of the COVID-19 on venture capital in small and medium enterprises from a critical perspective. The empirical study will confirm the existing literature review of venture capital in SMEs based on proper explanation of the research findings. A critical perspective of venture capital in SMEs in the COVID-19 context is based on secondary data such as published journals, books, website searches, and articles. The author of this study has been working in

Papua New Guinea for the last 13 years and has used his knowledge and experience widely on the subject matters to write this research. No formal research has been conducted for this study. The author used descriptive analysis to identify, re-assess critical analysis from different dimensions of venture capital. The outcome of the study can enlighten the existing literature review in venture capital and small and medium enterprises.

Changes in the Venture Capital Investment activity

The COVID-19 pandemic has impacted the entire operation of the world, including venture capital investment. The venture capital investors have not assessed the real impacts of the global pandemic. COVID-19 has created less momentum in the investment pool and extra risk aversion (Sabadell, 2020). The venture capital investment activity has been reduced on a global scale. The small and medium businesses have been halted in the second half of the year 2020, and most of the businesses have been liquidated due to the COVID-19 impacts. Investors overcome this by extensive monitoring and control procedures (Kaplan and Stromberg, 2001). In this context, VCs have increased their monitoring and are more concerned with portfolio re-evaluation due to COVID-19 impacts. During shocks and crisis in events, levels of uncertainty escalate at such velocity that their impacts become highly debilitating for entrepreneurs and entrepreneurial actors such as banks and investors (Block and Sandner, 2009; Conti et al, 2019; McMullen and Shepherd, 2006; Packard et al., 2017). More distressed-oriented investors can enter the market and create an unhealthy business environment due to the downward valuation with less traditional investors in the venture capital market.

COVID-19 has created more negotiable power for venture capitalists due to the low flow of investment to SMEs.VC has been changed in the paradigm from offline to online globally. VCs are positioned in the digital ecosystem. VC is mainly from foreign investment, and it has been decreased due to the closure of the cross-borders.

SMEs have been delayed to start-up business due to the unfavorable situation existing in the business world and the continuity in uncertainty of the future as well as having an impact on venture capital investment.

The new dimension in the Venture Capital Investment

Venture Capital investment has reduced in the global market, whereas

investment in the domestic has increased due to funds diverting from foreign to the local market. Due Diligence engagement has affected due to the reduction of face-to-face discussion. The seed venture capital investment has continuously declining due to the investors looking for well-established and matured company for their investment. However, the new investor is more concerned about the portfolio valuations when the valuation of the matured company is declining due to COVID-19. The Initial Public Offer (IPO) & mergers and acquisitions is also delayed in the global market. The cross-border venture capital investment has declined in the second and third quarters of 2020(Sabadell, 2020).

Global travel restrictions have created a vacuum in venture capital investment for SMEs. Therefore, Venture Capital investment has increased in the domestic market.

Venture Capital Investment activities for SMEs under COVID-19

Small and medium-sized enterprises are looking for prospective investors and VCs can perform the following activities under COVID-19 Context.

Startups and Supportive

Venture Capital is requested to startup businesses and most are ready to invest in it, nevertheless on this premature period it is difficult to forecast the achievement of the business. Liquidity Cash and seed capital are requested at the early stage of the business. Therefore, the higher is the risk of investment to be written off due to the uncertainty of the COVID-19 impacts.

Follow up on the funding for the startups

The VCs are not interested in the new business investment; however, they are more concerned in providing additional funds to the existing SMEs for survival. There are challenges of additional funding due to the travel restrictions and nonperformance of due diligence processes. IPOs have been reduced. The decision to postpone investment is a very strategic movement due to the uncertainty in the world.

Limited Partners and fundraising

The Institutional investors are not interested in the VC investment since it involves risks on assets, whereas high-net-

worth personnel and family officers are expecting a super return on the investment.

Leveraging and Technology returns

VC investees often provide digital services, platforms, or deep tech solutions, and have the agility to pivot business models to react to the crisis (Strusani, Verma, & Manent, 2020)**.** Some SMEs are extra resilient and ready to take the lead throughout the crisis, and the business also has an inherently innovative strategy. The technology innovation company can create benefits to the VCs in the medium term due to opportunities and trends in the post-Covid-19. The redesigned of strategic planning, post-COVID-19, technical assistance, and operational knowledge can be used to navigate the crisis readjustment (Brown & Rocha , 2020). The SME is trying its best to provide the best services to customers by using the power of technology, digitization and overall changes in the business model.

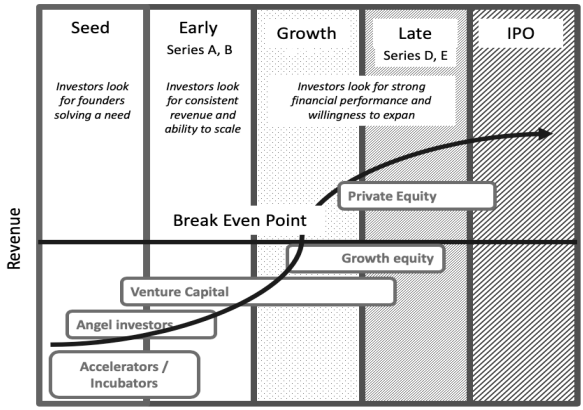

Figure:2 Venture Capital investment to the SMEs.

The above figure 2 shows how venture capital can break into five different stages of the Company's life.

The Venture Capital involved in these stages; from seed, early, growth, and mature stages. The Venture Capital has been fully involved in the early stage and growth of the Small and Medium-sized Enterprises. Digital technology in the VC can shift to the potential for growth since the crisis has demanded innovation, new entrepreneurial ideas, and

highly investing in essential services such as healthcare and logistics. In this context, SMEs has started to adopt the digital platforms such as innovative digitization business model and increase in new digital city consumers in the nascent market segmentation.

Conclusion

The COVID-19 pandemic has created the worst crisis in the 21st century. The severity of this decrease exceeds the decreases witnessed in more established markets for entrepreneurial finance such as the US (Howell et al., 2020). The financial performance of the SME's asset has deteriorated due to the valuation deduction in the entity's portfolio, foreign exchange volatility, and challenges in existing investments. SMEs are requesting financial support for the working capital for survival since the entity had faced dry powder during the prolonged pandemic crisis.

The COVID-19 impacts on the financial market will take over the global financial crisis as it already has an impact on the entire operation of the world. The global supply chains have been transformed to localization and diversification. The level of dry powder in SMEs has been deteriorating due to the prolonged COVID-19 crisis. It has worsened the global crisis in the 21st century. For over a century, uncertainty has long been recognized as a central pillar influencing entrepreneurial decision-making (Knight 1921). The length of VC fundraising cycle was increased due to the higher uncertainty in the market. However, a more prudent approach to the long-term investment is requested during the crisis. The public investment has been reduced and every country has budgeted a stimulus package to the SMEs business, but the practical implication of a stimulus package is the biggest challenge in the global context. The secure online engagement between the SMEs and VCs is encouraging a new dimension during this COVID-19 crisis, as it can save costs. The post-recovery stage of the SMEs is for future research, and it will create more literature reviews of COVID-19 impacts on the emerging financial market globally. SMEs have faced difficulty in estimating the budget and business plan due to the prolonging crisis. COVID-19 has created chances for others who are unable to join the previous investment.

The negative impacts of COVID-19 are expected to be higher on VC funds in the short term than on the Growth Equity funds (Strusani, Verma , & Manent, 2020). The current SME business model has been

transformed to avoid any strategic drift since COVID-19 has changed the paradigm of business practices. The SME growth is done with the support of all stakeholders including Business angels, who support the venture capital investment. The SMEs have developed a comprehensive resilience matrix to focus on the increased changes in the business environment.

Enterprise policymakers need to become better attuned to monitoring real-time data sources to mitigate chronic entrepreneurial uncertainty via strategic policy responses (Brown & Rocha , 2020)

Finally, to conclude, COVID-19 has affected venture capital investment in SMEs dramatically while the growth of the business for survival is crucial during this crisis.

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Community Resilience Dimensions of Recurrent Droughts in the Dry Zone of Sri Lanka

Weerasinghe RNN*

Abstract

Since ancient times, droughts have been a frequent feature of the Sri Lankan landscape, resulting in major economic, environmental, and social impacts. The communities living in the dry zone, Sri Lanka are highly vulnerable to irregular northeast monsoonal precipitation that results in recurrent droughts. Non-systematic methods have been the mitigation initiatives of the last decades in the dry region, where the main emphasis has been on short-term solutions without focusing on long-term strategies. Community resilience is a vital determinant of how a community will interact with stressors and disruptions, but it has proven difficult to conceptualize and quantify. In order to improve the resilience capacity of the community against the effect of persistent drought, a context-specific resilience system is necessary. The objective of the present study was to establish a context-specific resilience framework for the effects of recurrent droughts on the dry zone. The study focused on examining several dimensions of community resilience and strengthening the resilient strategies. Following an extensive literature review, the elements of the conceptual framework were identified under economic, infrastructure, social, environmental, educational and governance. The data was gathered through focus group discussions (n=05) and in-depth interviews of communities (n=18) using a semi-structured questionnaire basing aforesaid elements in five selected areas of North Central province. The qualitative data was analyzed using the thematic method. The study reveals that resilience indicators in the form of official statistics were not substantially linked to the real perceptions of resilience in societies. The local communities reflected low adaptive capacity to recurrent droughts, highlighting the context-specific interventions to enhance community resilience to meet national development priorities. Hence, a high priority should be given to integrating adaptation measures into sustainable

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development strategies. Moreover, the findings raise a concern about data gathering from rural communities in order to make policy changes about their resilience.

Keywords: *community resilience, disaster management, dry zone*

Introduction

Disasters are disruptive occurrences that cause losses for community livelihoods, belongings, their infrastructures, and also greater impact on the environment (Birhanu et al., 2017; WHO, 2012). The level of suffering from a disaster is highly dependent on the coping ability of the affected community (Ridzuan et al, 2017). According to UNISDR (2017) definition, disaster resilience is the capacity of a system, community, or society which is vulnerable to hazard to resist, hold, accommodate, adapt, rehabilitate and recover from a disastrous situation using effective and efficient approaches. Therefore, community resilience requires to foresee, planning, and disaster risk reduction in a timely and effective manner to protect the vulnerable community, the region, or the country in respect to their livelihoods, socio-economic aspects as well as cultural and environmental aspects (UN, 2015). Community resilience is involved in minimizing damages and deducting costs in a disastrous situation and improving the capacity of restoring to the pre-disaster situation, helping victims to manage and maintain their basic functions (Birhanu et al., 2017). Resilience also enhances the coping capacity of the vulnerable community by strengthening future responses and recovery efforts that learn from past experiences (Ridzuan et al, 2017).

Many parties including governments, NGOs, and researchers have drawn their attention to fostering disaster-resilient communities that spring back to the pre-disastrous situation at local, national, and international levels by enhancing community preparedness and prevention strategies (Ridzuan et al., 2017; Sun et al., 2011). The 2030 agenda for Sustainable Development has also recognized the importance of fostering disaster resilience communities by compiling 25 targets related to disaster risk reduction under 10 sustainable development goals (SDGs). It highlights disaster risk reduction as a core development strategy that should be addressed consecutively to economic development (UNISDR, 2015). Recently most researchers have a greater emphasis on building

community resilience highlighting the relationship between vulnerability, adaptability, and resilience concepts (Sun et al., 2011).

Droughts are one type of destructive occurrence that affects millions of people around the world causing severe damages to livelihoods, environment, and socio-economic activities, majorly for agriculture (Abesingha and Rajapaksha, 2020). Droughts occur due to extreme weather conditions occurs by natural variability and climate changes (Alahakoon, 2019). Anthropogenic activities such as overuse or mismanagement of water resources, deforestation, etc. also trigger droughts by making hydrologic imbalance that leads to a shortage of water. Droughts can define majorly in four types of disciplines including meteorological, agricultural, hydrological, and socioeconomic (UNDP, 2011). Droughts are slow onset, but the most complex and least-understood that affects a large group of people than other disaster occurrences (UNDP, 2011). Researchers and policymakers have a greater concern about increasing droughts occurrences, their severity, and frequency in the future due to anthropogenic involvement. The societal impacts from droughts are less explicit and extend over a large geographical area (UNDP, 2011). The most affected people from droughts are the farming community who are mainly dependent on agriculture.

Therefore, there is a high urgency of building up community resilience within the vulnerable communities to cope up with coming disastrous drought situations by strengthening their economy and livelihood opportunities as they cannot mitigate or control its occurrence (UNDP, 2011; Gunawardhana and Dharmasiri, 2015). For this purpose, it is necessary to understand the regional context of droughts and their impact on the vulnerable community. Moreover, gaining a deep understanding of local response systems, past experiences in drought situations, community practices, and knowledge should be analyzed to build up context-specific resilience to combat drought hazards. The existing resilience-building programs are based on the global or national level framework that has lacked sensitivity and compatibility for the target region and the community (Birhanu et al., 2017). In order to improve community resilience in a specific region, it is required in-depth understanding and conceptualize the concept of resilience using a context-specific resilience framework. Therefore, the study is mainly focused on developing a

context-specific, reliable, data-driven resilience framework to combat recurrent drought at a local level.

Country setting

Droughts can be considered as one of the most frequently occurring hydro-meteorological natural hazards in Sri Lanka. The rainfall regime of Sri Lanka is directly influenced by geographical and topographical features, mainly including being a small tropical island in the Indian Ocean and the near proximity of massive Indian sub-continent immediate to north and northwest of the island (UNDP, 2011). Hence drought has been a common feature of the Sri Lankan landscape from ancient times. The pressurized air streams start from the Northern hemisphere reach to Sri Lanka across the dry land of India in North East Monsoonal season during December to February, depressions, and cyclones in the Bay of Bengal during October to January, less rainfall during March to May due to convection under local thermal conditions and influence of the tropical convergence zone, and deviation of airflow direction in southwest monsoonal months of May to September, and also climatic changes cause recurrent droughts and dry spells in Sri Lanka (UNDP, 2011).

UNDP (2011) has mapped the drought occurrences in the Sri Lankan context, and it demarcates the dry zone, especially the study area, North Central Province as a very high drought hazard area that frequently undergone drought. Regional droughts are common at least once every 3 to 4 years and severe droughts also occur once in nearly 10 years (Alahakoon, 2019). Those have a major effect on development constraints in the dry zone. Shortage of water for domestic use, agriculture, and animal husbandry caused due to droughts and dry spells are serious issues, mainly for rural communities. Considering the socio-economic and environmental impacts, the Disaster Management act No.13, 2005 of the Government of Sri Lanka has identified drought as one of the most frequent natural disasters out of 21 frequent hazards in the country (UNDP, 2011; Alahakoon, 2019). It is estimated 21415559 people were affected and 600 were evacuated during the period of 1980-2020 due to recurrent droughts (Alahakoon, 2019). According to the Global Climate Risk index 2019, Sri Lanka is extremely vulnerable to climate change impacts and droughts consider as one of the frequent hazards (Abesingha and Rajapaksha, 2020).

Overview of past drought experienced in the dry zone of Sri Lanka

In Sri Lankan history, severe droughts have occurred in 1953-1956, 1974-1977, 1981-1983, and 1995-1996 have caused drawbacks in the economy (Gunawardhana and Dharmasiri, 2015). It is believed worst droughts in Sri Lankan history were recorded in the years 2001 and 2004. From the 2001 drought, 104,399 ha of paddy fields were lost and 5,071,625 people were affected. In 2004, 47105 ha of paddy lands and 198,521 people were affected. Therefore, a huge loss of rice production was caused due to most droughts. Moreover, the government allocations for the provision of drinking water to drought-affected people is high; in 2009 Rs 27,655,774 was allocated. Hence, the drought impacts not only the environment but also costs to the country's economy and society (Central bank report, 2014). In the 2013 drought that was caused due to delayed monsoonal rains and climatic change, nearly 20% of rice production was lost and over 1.8 million people were affected (OCHA, 2014).

The north-central province (NCP) is the center of rice production and the majority (73%) of people's livelihood is agriculture (Gunawardhana and Dharmasiri, 2015). Hence, droughts severely affect their livelihood and socio-economic aspects. The poverty headcount ratio of the Anuradhapura and Pollonnaruwa districts was 7.6 and 6.7 that has been increased compared to the previous years (Gunawardhana and Dharmasiri, 2015). The high prevalence of kidney failure among inhabitants has become the most concerning health issue in the region that may be due to the lack of purified water for drinking and cooking (Gunawardhana and Dharmasiri, 2015). In the 2014 drought, most families reported they consumed seed paddy for their living which was kept for the next irrigating season. According to the statistics from the department of agriculture, 83746 ha of paddy lands were destroyed and the estimated production loss was 280,000 MT of rice that is 15% of production (OCHA, 2014). In the 2016 drought, 110, 350 people in North Central Province had a water shortage for a long period of time (http://www.desinventar.lk/). In 2020, the Disaster Management Centre reported over 90,000 families are suffering from a water shortage due to nearly 3 months of drought spell and they respond to overcome its effects through tankering, installing water purification facilities, water tanks, and distributing drink water to

affected community (https://reliefweb.int/disaster/dr-2020-000122-lka, 2020). It is a project that most districts in dry zone are highly vulnerable to seasonal and year-round water scarcity by 2025 in relation to the recent irrigation efficiency (Abesingha and Rajapaksha, 2020).

The drought mitigation measures that have been taken as remedial measures during a decade before were not systematic and less context-specific. Most of the introduced drought mitigation plans were limited to a short period of time and less focus was given to long-term strategies (UNDP, 2011). Appropriate land and crop management practices as well as empowering vulnerable communities' infrastructure and socio-economic development were a lack in the context. Because of the uncontrollability of drought occurrences, some adaptation measures were taken by the government in the last decades include rainwater harvesting, tanks rehabilitation. However, their continuous improvements and building up the coping capacity of vulnerable communities and most of the disaster resilience dimensions are lack in the context (Joarder, 2018). In order to achieve community resilience, it must address at multi-levels representing individuals, households, communities, and systems. However, metrics to quantify resilience are lack in the local or global context (Birhanu et al., 2017). For instance, understanding context-specific dimensions including community vulnerability and adaptability factors are essential (Vazirian et al., 2021). Therefore, this qualitative study is aimed at having a broader understanding of local community resilience dimensions that ultimately leads to propose a context-specific framework for recurrent droughts in the dry zone, Sri Lanka.

Methodology

Study Area

North Central province (NCP) is the main area that contributes the largest portion of rice production in Sri Lanka. It is the largest in size but the second least populated province in the country. NCP composite by two districts, Anuradapura and Pollonnaruwa. The climate is semi-arid with a mean annual rainfall range from 1100-1300 mm and the mean annual temperature fluctuates around 26 ^{O}C to 27.5 ^{O}C (Gunawardhana and Dharmasiri, 2015; https://en.climate-data.org/asia/sri-lanka/north-central/anuradhapura-4862/). Mostly NCP is highly affected by droughts during June to August, the mid part of the year. The population of

1266663 individuals lives within the province (Census of Population and Housing, 2012). Cultivating paddy is the major livelihood option of nearly 73% of inhabitants while some are involving fishery, smallholder business activities, industries, and the service sector (Kaleel and Nijamir, 2017). Fieldwork was carried out from August to October 2019.

Study Design

A qualitative study based on a thematic approach is used for the study. The thematic approach is widely used in qualitative research that emphasizes meaningful patterns for describing and reporting the collected information. It is an inductive and flexible method that systematically analyses the qualitative data to develop a more abstract conceptual understanding of identifying dimensions within the study.

The data was gathered using Focus Group Discussions (n=05) and in-depth interviews of farming communities (n=18) in selected five areas of North Central Province covering diverse community groups. Five mostly affected divisional secretariats in Anuradapura and Polonnaruwa districts were selected, as the study is mainly focused on examining several dimensions of community resilience and strengthening the resilient strategies for recurrent droughts. The selected divisional secretariats are Horawpatana, Kahatagasdigilya, Ipolgama and Kekirawa in Anuradapura district and Medirigiriya in Polonnaruwa district. The purposive sampling technique is used to select participants for both focus group discussions and in-depth interviews considering their experiences and expertise. Focus group discussions were conducted with officers at two divisional secretariats (Horawpathana and Kahatagasdigiliya), officers at the Department of irrigation (Anuradhapura), Agricultural officers of Medirigiriya, and representatives of NGOs. In-depth interviews were conducted covering different stakeholders in agriculture including farmer organizations, small farm holders, elderly experienced farmers, and young cultivators. Mainly both FGDs and in-depth interviews were conducted under seven dimensions considering pre-, in-, and post-drought conditions as economic, infrastructure, social, environmental, educational, governance, and community preparedness as the research identified through an extensive literature review. Semi-structured questions that follow up to get information about their life experiences of recurrent droughts were prepared and reviewed by experts to ensure their

relevance and appropriateness.

As the secondary data, central bank reports, national reports of the Department of Agriculture, Department of Irrigation, Disaster Management Centre, journal articles, newspaper articles, and internet sources were used.

Thematic analysis was done by coding the qualitative data into sub-themes under major aforesaid resilience dimensions and reviewed further to derive the regional specific dimensions of the target communities.

Results and Discussion

Context-specific Community Resilience Framework is required to follow bottom-up approaches to develop and identify the needs of affected/vulnerable communities. Therefore, it is required to build up basing disaster specifically at regional level rather than implementing international or national level ready-made strategies to different regional contexts without having proper knowledge on community resilience dimensions of the vulnerable community (Figure 3.1).

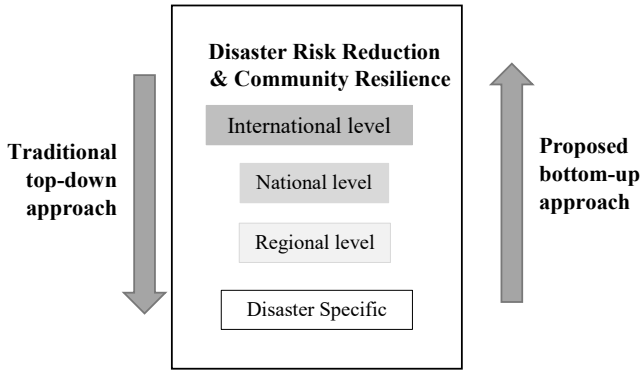

Figure 3.1: Approaches of Community Resilience Programmes

Hence, the study aims to build up a community resilience framework that works beyond the traditional top-down approach. The context-specific resilience framework developed for the recurrent droughts of North Central province from encoded findings of sub-themes under major resilience dimensions is given in figure 2. It is based on FGDs

and in-depth interviews and the formulated context-specific resilience framework was built as a conceptual tool that exhibits six dimensions of resilience required to achieve community resilience by incorporating preparedness, engagement, and adaptation activities (Figure 3.2). The framework shows the importance of increasing the coping capacity of the community in all phases; pre-disaster, in-disaster, and post-disaster. The framework illustrates the relationships in-between each major resilience dimension with respect to community vulnerability, adaptability, and preparedness considering pre- in- and post-disaster situations.

As shown in figure 3.2, community disaster resilience has been identified by closely interconnected six dimensions including, economic, infrastructural, social, environmental, educational, and governance. The framework exhibit the relationship among the aforesaid resilience dimensions in relation to recurrent drought in NCP to emphasize the importance of identifying the regional coping capacity of a vulnerable community to recover and become less vulnerable to future risks. The framework is prepared considering before-, in- and post-disaster situations that are faced by the community due to recurrent droughts in NCP. According to (Sun et al., 2011), the above-mentioned three stages of a disaster process can be divided into inherent resilience and adaptive resilience. Both resilience types are important in considering the disaster management cycle and very important to understand disaster resilience approaches to incoming disasters. Therefore, community resilience can only be developed by designing and implementing a regional-specific framework that works on data-driven and evidence-based (Birhanu et al., 2017).

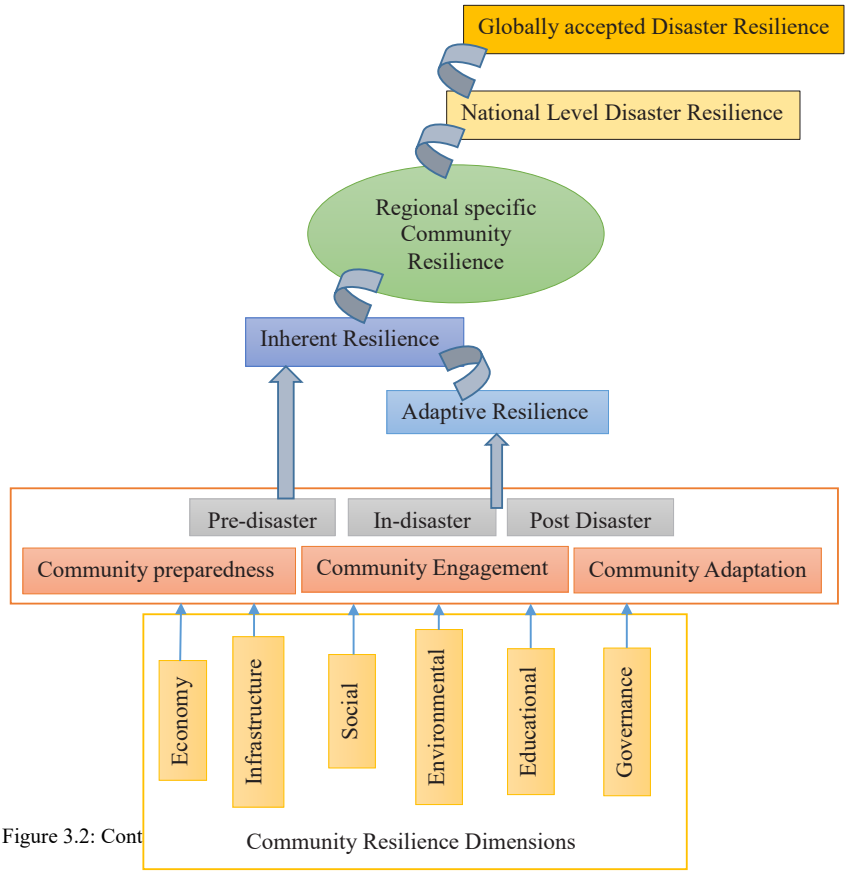

Figure 3.2: Cont

Community resilience dimensions

Environmental Resilience

The most discussed topic of in-depth interviews was the environmental resilience aspects of recurrent droughts in NCP. Most of the respondents mentioned climate change and other environmental variabilities have affected to occurrence and impact of recurrent droughts. Soil salinity has increased due to prevailed dry weather conditions and paddy cultivated lands have become unsuitable for cultivation (Abesingha and Rajapaksha, 2020). Moreover, deforestation occurs vastly due to cultivation and development processes, unsustainable use of natural

resources, overgrazing by farm animals have caused environmental degradation in NCP that may result in severe droughts within the region. All of the respondents believed climate change has a major impact on recurrent droughts even though they have tank cascade systems in the dry zone. Most of the respondents in focus group discussions emphasized the requirement of environmental management and protection efforts within the region to reduce the impact of recurrent droughts. Therefore, the environment is an important part that has impacts on the recurrent droughts and vulnerability of the community. Few respondents answered adaptation measures such as rainwater harvesting, desilting of minor rivers, and tank rehabilitation activities improved the resilience among some communities. However, the majority did not understand the importance of adaptation strategies and practice their day-to-day lives.

Economic Resilience

Economic aspects are another important dimension that is universally understood and it has been severely affected to NCP as well. In order to withstand a disastrous situation, economic resilience is one of the important factors. The majority live in NCP are rural communities whose livelihood is paddy cultivation. Other livelihood options common in the region are animal husbandry, fishing, brick production, and small farm enterprises. Sub-themes under economic resilience also include money deposits, access to credit services, and availability of loans/insurance systems.

It is believed that the economic factor is strongly interlinked to the social factor including mental health and infrastructure. Moreover, survival of the in-disaster period by the provision of adequate food is highly dependent on their resilience in the economy. As some of the respondents mentioned, many affected communities suffer from a lack of food and suitable drinking water due to the unstable economic conditions of the family. The majority consume seed paddy also during disaster periods as they don't have any other options as livelihoods rather than paddy cultivation. Officers at regional secretariat offices involved in focus group discussions mentioned illiteracy of elderly people, poor management of money, and inability to obtain loans/ credits due to being mortgage owners, have cause less economic resilience in NCP.

Infrastructural resilience

The dry zone is endowed with a cascade-based small tank system to provide water for the paddy fields. However, those were not in functioning until the plan Sri Lanka implemented of small tan rehabilitation in the year 2004-2009 (Nianthi, 2015). The majority of respondents confirmed tank rehabilitation programs conducted under government projects increased the water supply in recurrent dry spells and drought periods in NCP. Moreover, rehabilitation of tanks led to improve fishery industry involvement as a secondary livelihood in most farmers. However, maintaining the rehabilitated tanks appropriately and improving other infrastructural facilities such as road developments, provision of electricity, etc. required to establish as mentioned by Many FGDs and interview participants.

Social Resilience

Various social aspects were discussed with interviewers. As they mentioned, most of the community members are living in stressful situations during and post-disaster periods due to depression, distress, and fear and hopelessness, etc. types of emotions caused due to losing their livelihood option. The stress builds up about provision for food, safe drinking water, debts and loans, children education, most of the elderly people spent miserable time with recurrent droughts. The majority stated that Disaster Management Centre (DMC) has started providing safe water from water bowsers NCP (Nianthi, 2015). Moreover, most families, members, or two are sick or expose to diseases spent very stressful periods under disastrous incidents. One farmer explained the difficulties he got due to cultivating land under the sharecropping method. FDG committees also mentioned the skin diseases, diarrhea, and water-related diseases cause to the vulnerable community during dry spells.

Governance

Even though FDG participants mentioned good governance is conducting with the NCP, most of the interviewees point out loose holes in it. The majority complained of unfair treatment to different ethnic and social groups rather than providing a helping hand to the poorest crowd. FDG participants highlight improving conflict management and resolutions practices should be enhanced to maintain a secure environment for all. Inability to access infrastructure, inequitable distribution of facilities have triggered conflicts among ethnic communities within the region.

Even though District Disaster Management Coordinating Units have been established under the supervision of the Disaster Management Center to coordinate local level disaster management activities. Their contribution and function are not well progressing.

Educational Resilience

Human capital considers one of the major resilience components to combat droughts (Birhanu et al., 2017). The majority of FGD participants highlight the importance of improving the community's knowledge, capacity, leadership, education, and training. Moreover, recurrent droughts within the area cause distract educational services, limited access to school, and dropouts from schools.

The majority of interviewees' shared positive thoughts, explaining the importance of providing school education to the children and participating in awareness programs.

Resilience dimensions involved around aforesaid factors highly affect community preparedness, engagement, and adaptation strategies. Many adaptive strategies were proposed by the participants of FGDs and interviews to boost the community resilience as the provided are insufficient. Due to recurrent droughts, demand for livelihood development and farmer's response mechanisms require to enhance by expanding short-term drought prevailing mechanisms to long-term adaptation strategies. Furthermore, those factors address the main needs of living communities such as the provision of safe food and water, security of their livelihood, harvest and credit management, requirements in governance and education as well. The majority of farmers have lack knowledge on comate change and relevant adaptation strategies. Bethma practice and Murawathura system are well-known practices across the region. Some cultivators have started growing drought-tolerant species, changes in their crop cultivation calendars under the instruction of agricultural officers within the region.

Environmental protection became a hot topic, so improving awareness further on environmental degradation and climate change were discussed in FDGs. Promotion of timber species and ensuring forest conservation

by banning its clearance will be good long-term strategies that could be implemented within the specific region. Tank rehabilitation was timely initiated great work but the efficiency should be enhanced in NCP. The issues that occurs due to other development activities such as vector breeding and problems to fish harvest were discussed. Therefore, introducing environmental impact assessments for tank rehabilitation programs will be a good approach. Moreover, maintain monitory systems and the water balance of the cascade system within the NCP should be enhanced. Improving technical and vocational skills, business and management training will be beneficial to enhance community resilience as it enhances educational, social, and economic aspects. , Ensuring equitable access to basic services and infrastructures, mainly water resources; markets, and establishing an effective drought warning system and provision of access to metrological information will be good initiatives to build up community resilience. It is important to design a support mechanism to maintain good mental health in enhancing community resilience. Moreover, ensuring access to financial services, providing loans and insurance schemes for their paddy cultivations, promoting entrepreneurship and business development will improve the community's economic resilience. Integrate adaptation measures into sustainable development strategies which require addressing by 2030 will be one effective measure of implementation of research findings to the practical context.

Conclusion

The study was mainly focused on developing a context-specific data-driven resilience framework to combat recurrent drought in the North Central province of Sri Lanka. The framework illustrates the importance of increasing the coping capacity of the community in all phases; pre-disaster, in-disaster, and post-disaster. The framework illustrates the relationships in-between each major resilience dimension with respect to community vulnerability, adaptability, and preparedness considering pre- in- and post-disaster situations. According to the results, the most influential dimensions under drought disaster resilience to the NCP are environmental, economical, and infrastructural dimensions. The social and governance-related dimensions are considered important as well. In general, reinforcement of effective dimensions can enhance flexibility and adaptability to the environment and reduce potential losses in

critical drought conditions. For instance, the new resilience framework developed by this research can be used as a guide to design context-specific community resilience frameworks.

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