Proximal Scaling (PROXSCAL) of Small Medium Enterprises (SMEs) Resource-Based Challenges during COVID-19 Pandemic

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Abstract

This study examined the Resource-Based challenges SMEs in Davao Region confronted during the COVID-19 pandemic. The Resource-Based Theory was applied to explain how the present COVID-19 created significant challenges in social capital and factor-based resources. The study evaluated survey responses from SMEs using exploratory factor analysis (EFA) which identified two critical factors, social capital and factor-based resource. The identified two factors were used as the proximal scaling (PROXSCAL) dimensions to approximate the visual representation of the pattern of proximities among SMEs. The research result shows that almost half of the SMEs experience moderate to high challenges in factor-based resources; access to capital, business intelligence, supply chain, and skilled labor, while more than half revealed challenges in social capital in terms of relationship with banks, insurance, universities, business association, and government units. This study is the first attempt to determine SMEs' resource-based challenges during the COVID-19 pandemic using an EFA as the dimension in the PROXSCAL.

Keywords: Resource-based theory, SMEs, Factor Analysis, Proximal Scaling (PROXSCAL), Davao Region, Philippines

Introduction

COVID-19 is shaking the local economy, creating a permanent disruption to the livelihood, social and economic system. Experts claimed that the pandemic was the most horrific national crisis since WWII. Aside from a massive health crisis, COVID-19 created systemic shock with profound consequences, both short- and long-term effects (Liñán & Jaén, 2020). The pandemic has caused a significant economic contraction, closed many firms, and confined thousands to unemployment. The SMEs continue to assume a critical role in preventing food shortages, poverty, and unemployment from exponentially increasing (Caballero-Morales, 2021).

The pandemic strongly affects 68 percent of SMEs in the Philippines, around 500 firms. About 24 percent were micro, and 18 percent were small, of which 88 percent admitted a decline in sales (Ibanez, 2020). In a study, the Asian Development Bank (ADB) was conducted to determine the Enhanced Community Quarantine (ECQ) effect, which resulted in substantial economic losses. Even six months after the lockdown, SMEs face a sharp decline in demand and revenue (Shinozaki & Rao, 2021). However, SMEs that were more competitive even before the pandemic crisis could withstand the shock attributed to their inherent financial management skills and innovation. These firms were more agile and resilient. Moreover, businesses with a special connection to their environment could acquire better information and support critical to surviving the crisis (Flaminiano, Francisco & Caboverde, 2021).

SMEs often frame crises instead of focusing on risk and damage control. However, for a competitive SME, a crisis offers varied growth and advantage opportunities. Survival requires businesses to absorb stress, recover critical functionality, and flourish in various conditions to create significant strategic value (Belitski, Guenther, Kritikos, & Thurik, 2022). Through multiple strategic resources, competitive SMEs enjoy better results than their counterparts and a

variety of numerous strategic resources. COVID-19 exposed the vulnerabilities of SMEs in their limited resources. Many factors caused these constraints, such as limited capital, information, production tools, new technologies, and human resources. During the COVID-19 crisis, these resources were considered vital to increasing competitiveness (Omar, Ishak, & Jusoh, 2020).

The current situation forced SMEs to factor in resource and relationship structural reform. To a greater extent, the number of SMEs and their performance affects the pace of factor resources. Initially, the pandemic stages desperately need the assistance of some local advantageous entrepreneurial resources. During the pandemic, small businesses faced resource shortages threatening sustainable development or survival (Ratten, 2021). The new combination of factor resources is an effective technique to solve resource shortages during the pandemic crisis. The factor resources are essential to solve new problems, develop unique products, and make innovative use of the limited resources. Presently, the situation determines the need of enterprises to obtain valuable resources effective in combining limited factor-based resources (Duda, Wolak-Tuzimek, & Wojtowicz, 2021).

The pandemic created demand disruptions and supply challenges that varied from sector and industry. Most government intervention is not universal but needs to consider the SME pandemic impact. Network formation is required support for the renewal and growth of enterprises. Social marketing tools and networks are the most vital factor in decreasing the probability of enterprise bankruptcy by 56.1 percent (Belas, Gavurova, Dvorsky, Cepel & Durana, 2021). For instance, in the Philippines, the current business network and relationships SMEs established before the pandemic helped them to cope with the crisis readily. Thirty-two percent of SMEs reported that they succeeded in receiving financial from the government and

business networks such as rural banks, MFIs, and social networks to straighten their cash flow needs (Microsave Consulting, 2021).

Theoretical Framework

The resource-based entrepreneurship theory proposes that entrepreneurs' access to resources is an essential predictor of sustained competitive advantage. The resource-based view is traceable to (Penrose, 1959b), who claimed that resources constrained or enabled organizational growth. According to (Penrose, 1959a), resources are materials and people accessible and promote the organization's effectiveness. Several succeeding studies called these strategic resources (Amit & Schoemaker, 1993). These resources can reduce cost or increase resources; competitors do not have access to these resources and difficult to replicate or imitate (J. B. Barney, 2001b). Thus, access to resources increases the SMEs' capacity to perceive and act on discovered opportunities. Especially if these resources are combined, it creates synergy, which further differentiates the enterprise's capabilities. The theory implied the entrepreneur's attempt to pursue uniqueness instead of becoming the best enterprise in all criteria. (Alvarez & Barney, 2007) claim that an entrepreneur only needs resources to take advantage of an opportunity. Afterward, little attention is required in organizing, coordinating, and executing. Considerably the situation is similar to exploiting opportunities by environmental changes such as a pandemic crisis. On the other hand, entrepreneurs need more organizing to take advantage of the opportunity if they lack vital resources.

Earlier work on the resource-based theory (RBT) recognized that entrepreneurship is a complex resource-based framework (Wernerfelt, 1995) (Rumelt, 1987)). The RBT has become a significant paradigm in understanding the entrepreneur's actions to create and combine resources to develop new resources that contribute to the SME's competitive advantage. The central

assertion of RBT is that strategic resource ownership enhances organizational benefits (J. B. Barney, 2001a), which empirical evidence supports the idea (Crook, Ketchen Jr, Combs, & Todd, 2008). Resources are the fundamental knowledge, information, firm dimensions, organizational processes, capabilities, and assets. SMEs are controlled to create or implement strategies that enhance effectiveness and efficiency (J. Barney, 1991). In other words, anything associated with the organization is a resource (Priem & Butler, 2001).

The resource-based theory (RBT) vie that a firm integrates corporate social capital. In the RBT, even intangible resources are perceived as part of the SME's pool of resources, creating a competitive advantage. Social capital assumes a strategic role among such intangible resources. In several issues, the inclusion of social capital strengthens the analytical of the RBT (Chisholm & Nielsen, 2009). Social capital originates from the claim that social resources develop mutual trust from social structures and networks. These conditions explicitly focus on the core concept: social resources. It processes the creation of a particular mechanism that links social capital and specifies the state in which positive social capital emerges (Rostila, 2011)

It is not commonly observed that entrepreneurs work in a social network to grow and thrive in their business ventures. From the perspective of social network theory, entrepreneurs are immersed in networks of persistent social relations (Walker, Kogut, & Shan, 1997). Networks are valuable tools for accessing resources. Social capital may be a substitute for investment capital. Through social interactions, entrepreneurs can access information that flows over social networks. A strong network is better for accessing opportunity-related information than a weak one (Granovetter, 1973). Usually, close ties contain repetitive information. For instance, family members interact in small numbers and repeat most of the same information or

experience. Contrary, entrepreneurs can create weak networks with hundreds of individuals in different networks, providing them access to information that ordinarily flows through close ties.

Colonial times that connect social networks are called bridging ties and are specifically helpful for sifting out valuable information. Social network advantages occur to entrepreneurs who bridge structural holes created from a lack of social connection between large networks. An entrepreneur who connects two social groups successfully has better opportunities than a similar connected social network (Rostila, 2011).

Significance of the Study

This study intends to determine the factors resources SMEs in Davao Region consider significantly critical in their continued survival. Also, it attempts to ascertain the current level of challenges regarding factors about factor-based resources and social capital. This study furnishes information that increases the entrepreneur's understanding of their collective challenges regarding critical factor-based resources and significant factors on social capital. Moreover, the study used the factors analysis as the indicator for the two dimensions in the proximal scaling to present a visual illustration of (dis) similarities of resource-based challenges among SMEs.

Methods

The respondents of this study are the entrepreneurs of small-medium enterprises (SMEs) in the Davao Region, Philippines, which maintained business operations even during the local lockdowns. The focus is to determine the most challenging factors and the visual proximities of each SME.

The entrepreneurs completed a modified short version of the adopted questionnaire (Sultan, 2007), which was administered by the instructor of the BS Entrepreneurship program

through the Google form, along with the measure of resources in terms of factor resource (RBT) and related and support industries (SCT). The data privacy of the respondents was observed.

The factor analysis technique reduced many resource-based factors into fewer factors. The correlation matrix was factorable, confirmed by the correlation matrix, and submitted for EFA. The principal component analysis (PCA) was selected over typical factor analysis to identify a latent factor structure. For determining factor adequacy, an a priori criterion was established. Based on the number of respondents, the study pattern coefficient was salient at $\geq$ .37 (Streiner & Kottner, 2014). Internal consistency reliability of $\geq$ .70 factors with pattern coefficients is considered adequate.

The multidimensional scaling, specifically the proximal scaling (PROXSCAL), was used to find the set of proximity measures between SMEs. The process is assigned observation to specific resource-based challenges, social capital, and factor-based resources in a conceptual low-dimensional space, given the distance between SMEs in their similarities and dissimilarities (Lange & Keys, 2015). The result of the factor analysis was assigned in the PROXSCAL dimensions. The outcome is a least-square representation of the SMEs in the low-dimensional space, which helped further understand the resource-based challenges during the COVID-19 pandemic.

Results and Discussions

Initially, the factorability of the 23 items was examined. It was observed that 10 of the 23 items correlated with at least 0.3. The Kaiser-Meyer Olkin measure of sampling adequacy is 0.807, above the commonly accepted value of 0.7. The Barlett's test of sphericity was significant (χ^2 (310) = 138.245, p<.05). Finally, the commonalities were above 0.5, confirming that the nine (9) items shared a common variance. An overall indicator factor analysis was suitable for all nine

(9) items. Initial eigenvalues used in the principal component analysis indicated that two factors explained 51.53 percent and 15.78 percent of the variance. Solution for two factors using varimax and rotations of the factor loading matrix explained 67.32 percent of the variance.

Table 1

Barlette's test of sphericity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.807
Bartlett's Test of Sphericity	Approx. Chi-Square	138.245
	df	36
	Sig.	0

The first factor is identified as social capital with the relationship of the following indicator with universities and private training centers (0.864), relationship with insurance (0.857), relationship with government units (0.842), relationship with banks (0.825), and relationship with business association (0.799). The second factor is identified as factor-based resources with the following indicators access to capital (0.754), business intelligence (0.748), supply chain (0.734), and skilled labor (0.637).

Table 2

Rotated Component Matrix Extraction Method: Principal Component Analysis. Rotation

Method: Varimax with Kaiser Normalization

Rotated Component Matrix*a*	Component	
Indicators	Social Capital	Factor-based resources
Relationship with universities (univ)	0.864	
Relationship with insurance (relinsure)	0.857	
Relationship with government units (govtunits)	0.842	
Relationship with banks (relbanks)	0.825	
Relationship with business association (busassoc)	0.779	
Access to Capital		0.754
Business intelligence		0.748
Supply chain		0.734

Skilled labor		0.637

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 3 iterations.

The stress and suitable measures depicted a very low normalized raw stress of 0.03568, similar to S-stress, 0.05326, and Tucker's Coefficient of Congruence, 0.982.

Table 3

Proximal Scaling Minimized Normalized Raw Stress

| Stress and Fit Measures	
Normalized Raw Stress	0.03568
Stress-I	.18888a
Stress-II	.41532a
S-Stress	.05326b
Dispersion Accounted For (DAF.)	0.96432
Tucker's Coefficient of Congruence	0.982

PROXSCAL minimizes Normalized Raw Stress.

a Optimal scaling factor = 1.037.

b Optimal scaling factor = .953.

The figure below has two dimensions, the first dimension is the social capital, and the second dimension is a factor-based resource. Dividing the dimensions into four quadrants, the first quadrant with the presence of both moderate to high social capital and factor-based challenges, the second quadrant has low to very low social capital challenges but moderate to a high level of factor-based challenges; the third quadrant has a low to the superficial level of social capital, and factor-based challenges and the fourth quadrant has low to the shallow level of factor-based resource but a moderate to a high level of social capital challenges.

Figure 1

Proximal Scaling of SMEs in Davao region in Social Capital and Resource-Based View
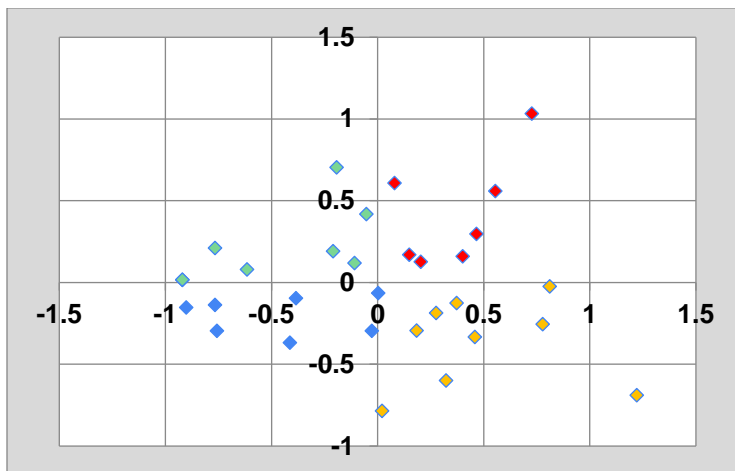
The first quadrant has 23 percent of SMEs with moderate to high challenges in social capital and moderate to a high level of challenges in factor-based resources. The second quadrant has 23 percent of SMEs experienced low to very low social capital challenges but moderate to high factor-based resource shortages. The third quadrant has 23 percent of SMEs, revealing low social capital and factors-based resource challenges. The fourth quadrant has 30 percent of SMEs divulge moderate to high social capital challenges but low to low factor-based resources challenges.

Table 4

Percentage Matrix Distribution of SMEs in Two Dimensions and Four Quadrants

Challenges	Dimension 1- Social capital	Dimension 2- Factor- based resources
Quadrant 1 (23%)	Moderate to high	Moderate to high
Quadrant 2 (23%)	Low to very low	
Quadrant 3 (23%)	Low to very low	Low to very low
Quadrant 4 (30%)	Moderate to high	

In perspective, 53 percent of the SMEs face a moderate to a high level of challenges with their social capital, while 46 percent of the SMEs experience low to very low challenges. Similarly, 46 percent of the SMEs confronted a moderate to a high level of factor-based challenges, and 53 percent expressed a low to superficial level of challenges.

Social Capital

Social capital is composed of the level of rivalry in the relationships of SMEs with banks, insurance, business associations, government units, and universities (Woolcock, 2001). Social

capital has a substantial value in constructing network relationships that influence SMEs' direction and survival during a crisis (Lyons & Snoxell, 2005).

The relationship with local banks

Local and regional banks understand more the needs of the small business community. Most often, banks' employees and managers are known to SMEs. In other words, they are personally investing in the success of their relationship with local businesses and the community (Talavera, Xiong, & Xiong, 2012). The flexibility, acceptable fees, and community awareness of community banks indicate that a small business owner's best option is to resort to financial assistance. Strengthening the local economy through support for entrepreneurs and local communities leads to solid relationships between SMEs and banks (Pham & Talavera, 2018).

As a support industry, there is a moderate rivalry between the SMEs relationship with locals. Local SMEs understand the challenges of working with big banks, which require a different approach. Instead of pursuing large commercial institutions, SMEs build a relationship with community banks as a rule and not an exception (Shao & Sun, 2021). Since community banks do not have a large bureaucracy to deal with, a little more flexible and more favorable to making character loans, it is much easier for SMEs to secure a startup loan from community banks. Nonetheless, the SME still recognized that securing a loan from a community bank is not direct and immediate. They must meet the credit and collateral requirements similar to large banks (Doh & Zolnik, 2011).

Similarly, the low level of critical relationship with local banks did not necessarily mean securing a loan from a community bank was immediate. There are still requirements SMEs have to meet. On the other side, local banks tend to consider the personal attributes of the borrower (Dudley, 2021). Most likely, the personnel from the bank know the entrepreneur, who is more

vital than the required credit or collateral. The entrepreneurs distinguish that developing

relationships matter most. Most SMEs transact personal banking at the same place for several

years and know people in the bank. The relationship and the networking built over the years

allowed SMEs to maintain competitiveness.

Relationship with insurance firms

SMEs are vulnerable to threats such as natural disasters, economic crises, political

instability, and pandemics. These unpredicted events disrupt business activities resulting in

enormous psychological stress and financial burden among employees and management. SMEs

must develop ways of mitigating such circumstances by adopting different strategies, including

purchasing insurance.

The SMEs consider the relationship with insurance firms has a low critical threat and

rivalry. Entrepreneurs recognize their low financial capabilities and consider standard insurance

as appropriate for dealing with the risk inherent in their industry. The rating emphasized that

SMEs, as resource-scarce, are characterized by untapped market potential (Flap, Kumcu, &

Bulder, 2000). Also, fewer SMEs recognize the value that insurance offers. The SMEs' hesitation

in purchasing insurance is the perceived lack of benefits and potential expense, and the

recommended policy contains the highest premium. However, most SMEs acknowledge that

insurance provides an extra level of confidence, and the changes in their business reflect in their

insurance.

SMEs recognized that access to insurance could assume a remarkable role in cushioning

risk by absorbing shocks and risk management. Experiencing growth, SMEs need insurance to

mitigate the increasing possibilities of financial losses more significantly than the informal risk

mitigation mechanism. SMEs believe formal insurance products are critical tools to improve resilience, increase investment, and hasten recovery.

Aside from improving the SMEs' resilience position, insurance increases the awareness of both the entrepreneurs and employees on risk and informs on the price of insuring the particular risk. Insurance companies protect SMEs from financial losses attributed to risks related to business (Tötterman & Sten, 2005). Without insurance, SMEs are forced to adopt costly risk coping strategies, including depleting savings, selling productive assets, or securing loans. These mitigating strategies are more expensive than securing comprehensive insurance.

Relationship local manufacturers

Business membership and networking increase firms' competitive performance, innovation, and productivity. The arrangement of all SMEs combines the advantages of small scale with different benefits of large businesses. Easily SMEs recognize the opportunities and confront challenges associated with an economic crisis such as the pandemic. Formal membership and networks in a local business association provide an SME framework for cooperation between firms. The collaboration can lead to efficiency-enhancing collaboration between members, such as joint marketing initiatives, training, and credit guarantee association.

SMEs in Davao perceived a low level of critical threat and rivalry in their relationship with local businesses. The response depicts that their network allows them to engage in peer-based accelerated learning, which shapes a better relationship with suppliers and provides improved efficiency through collective action. (Fafchamps, 2006) Maintaining proactive networking offer a greater specialization among SMEs, presenting opportunities for economies of scale and scope.

The persistence of SMEs to maintain networking with other local businesses results from the capabilities and incentives to innovate contingent on the health crisis. The environment allows specific networking to compete successfully against unorganized competitors (Lajqi & Krasniqi, 2017). Innovative performance is a function of innovative investment, effectiveness, technological opportunities, and focus creative activities on overcoming challenges. Consequently, SMEs' investment in innovative training relies on the rewards of innovation and the distribution of gains from innovation which depend on the existing competition in the market (Westlund & Nilsson, 2005).

SMEs endeavored to maintain membership in the local business association for small businesses, which presents focal points for new business activities and investment. Local business associations provide business research on emerging markets, and local government units contribute to industry-specific infrastructure (Van Staveren & Knorringa, 2007). Similarly, local universities offer specialized training and industry-specific research. SMEs believe these investments allow them to leverage their investment in innovative activities. Also, local business associations provide role models, information, and suppliers that create a favorable environment for innovative derivatives.

Relationship with government units

Government units assume a significant role in SMEs' increased performance and economic growth since it creates economic development, poverty reduction, and employment opportunities. However, in the last two years, SMEs have confronted many challenges due to the pandemic that developed into barriers, such as a lack of government incentives and subsidiaries.

According to the SMEs, there is a low critical threat but a high rivalry level with a relationship with government units. The SMEs believed that the high rivalry level depends on their perception that the government is supposed to provide equal incentives to each sector distributed to every firm (SKAWIńSKA, Zalewski, & Brzęczek, 2012). However, due to unstable government positions government fell short in spreading equitable incentives such as tax and financial incentives to attain sustainable competitive advantage performance. SMEs identify that sufficient government support such as training, incentives, and grants assume a significant role in competitiveness (Šmaguc & Vuković, 2020).

Entrepreneurs feel an existing rivalry in accessing government support among SMEs. Relationship with the government unit is considered a resource that allows them to gain a competitive advantage. At the same time, their current networking with other firms and government units shapes the valuable resources that enhance their performance (Park & Feiock, 2005).

Government support promotes immediate access to resources and facilitates SMEs' financial and nonfinancial development. Though the tax payment, loan, service, training, and credit cannot enhance a firm's performance, it is a vital catalyst for sustainable performance (Rado, Lu, Lin, & Aoo, 2021). Thus government support plays an essential role in the improvement of business performance. A strong focus on government support through technological development assists the SME's growth. Specifically, government financial incentive is considered an essential factor in facilitating innovation.

Relationship with universities and training centers

The concept of the university and SMEs cooperation involves all systematic activities that combine both resources, so using their resources alone makes the task difficult or impossible to perform. The objective of the cooperative arrangement between SMEs and universities is to use the innovative capacities of universities, expand financial resources, and remove the barrier to knowledge and access to technologies. SMEs should similarly establish a relationship with another training center to develop innovation activities (Theodoraki, Messeghem, & Rice, 2018).

An essential type of cooperation is technology, an agreement that is intentionally and freely created between two or more enterprises to exchange and develop technology. In a fair competition, SMEs need innovative resources, and the advantages of present competition and their internal resource are not enough for competitiveness (Grzegorczyk, 2019). Technological cooperation becomes the tool to develop a competitive advantage to reduce the gap between existing and ideal capabilities. The shortage of financial resources and skilled human resources are the reasons that force SMEs to seek assistance in the development of technologies (Al-Tabbaa & Ankrah, 2016).

The cooperation is freely organized between two or more SMEs and develops entrepreneurship dimensions with the university. The arrangement is based on various motivations: innovation, scientific advancement, and financial benefits. SMEs perceive a high level of rivalry based on financial benefits earned from parties engaged in cooperation (Theodoraki et al., 2018). Limited SMEs can cooperate effectively with universities, especially on information transfer, equipment testing, and innovation. More parties involved tend to reduce information transfer in cooperation which SMEs perceive as the source of intense rivalry. SMEs

accept that cooperating with universities at a given level benefits their growth, especially with a higher commitment, which is impossible with so many parties involved (Grzegorczyk, 2019).

Factor-based resources

The factor-based resources are composed of the level of the critical situation to access capital (Kelliher & Reinl, 2009), business intelligence (Olszak, 2016), supply chain (Hunt & Davis, 2012), and skilled labor (Khizindar & Darley, 2017) needed during the COVID-19 pandemic. These were the indicators identified in the factor analysis. Typically the identified indicators are intangible resources and the most strategic resource of a firm.

Acquiring capital

Acquiring capital through formal lending institutions such as banks is the most common financing for most SMEs. They rely primarily on debt to meet their investment and cash flow needs. However, for SMEs in Davao, the traditional financing scheme poses challenges and may not suit the enterprise's current life cycle stage (Widjajanti, 2020). The SME community recognized the limitations of conventional debt financing for various capital needs enterprises encounter along their life cycle, which sustained the most progressive enterprises. Specifically, debt financing is insufficient for fast-growing, innovative, and new with a high risk-return profile to survive during the pandemic. The financing gap existing in these SMEs is called the growth capital gap (Somsuk, Laosirihongthong, & Mclean, 2012).

The endeavor of SMEs in Davao to continue surviving required substantial capital to finance projects with high growth prospects, while the profit pattern association is a challenge to predict. In the case of a new enterprise that depends on intangibles, the financing constraint is the presence of collateral in traditional debt relations. For most SMEs, there are few substitutes for conventional debt (Eniola, 2020). The condition depicts a fundamental challenge for SMEs

pursuing sustainable recovery and long-term growth to assume the primary role of developing a new business model, job creation, and job creation.

Alternatives to traditional debt finance are essential for innovative, high-growth, and startup SMEs. The development of alternative financing techniques is relevant to most SMEs in Davao Region during the pandemic. The existing situation compounded the capital gap for firms searching to effect essential transitions in their operations, such as improving the capital structure. The limited capitalization, excessive reliance on debt financing compared to equity, and significant debt tend to offer higher interest rates and a high potential for bankruptcy and financial distress.

Business intelligence

One primary business strategy for building competitive advantage is understanding SMEs' data. Gradually, processing information is the basis for attaining a competitive advantage. A successful firm believes in acquiring the correct information at the right time and being accessible to the right people. SMEs' access to business intelligence solutions has few alternatives since large companies' greater openness to this program is attributed to their financial ability (Olszak, 2014).

SMEs in Davao region has a very high critical requirement and a low rivalry in business intelligence access. The potential of Business Intelligence includes its adaptability, weakness, strong points, limitations, scope, and assumptions in SMEs adopting business intelligence (Fink, Yogev, & Even, 2017). Large corporations realized the importance of information systems early on and started investing in systems with excellent analytical skills, specifically in business information. Recently several SMEs started gathering prerequisites to receive business intelligence solutions. Entrepreneurs acknowledge there is a critical role in the process of

decision making, which capacitate them to access, store, collect and analyze data to support and facilitate decision making (Olszak, 2016).

It can be said that SMEs in Davao region highly intend to obtain and maximize profit. With business information, SMEs can understand operations or marketing information and guide organizational policies to the particular needs of the customer while still attracting new customers and retaining loyal customers with value-added products. Business intelligence connects the various system and users to access information, creating an environment that facilitates access to information required for everyday activities and provides business analysis performance, especially during a pandemic.

Supply Chain Management

The current pandemic affected a wide range of value chains and activities. Simultaneously, each activity's effect appears decidedly different, making the impact on the value chain recognizable. The accompanying economic slowdown paved the initial path leading to a revenue effect (Rungtusanatham, Salvador, Forza, & Choi, 2003). As the national government implemented lockdowns and business shutdowns, the demand of businesses and consumers spiraled for the duration of the lockdown and even beyond. Also, the effect is related to consumer confidence and expenditures while companies sell stocks instead of producing new products. The comprehensive economic slowdown confirms that demand is unlikely to return to the pre-pandemic level immediately. Decreasing demand worldwide was translated to the value chain affecting production and demand at critical levels.

SMEs do not compete alone; instead are immersed in an environment wherein supply chains compete. A firm must depend on its supply chain position to create a better competitive advantage. Before the pandemic, it is essential to realize that SMEs strive to attain two

significant competitive advantages (Yang, Jia, & Xu, 2019). First, high SME integration results in unstable demand attributed to increased information demand for operational knowledge during the pandemic. Second, high-integrated SME supply chain partners cannot decrease the additional cost of doing business. Currently, the situation heavily encumbered the SMEs in procuring raw materials (Chacón Vargas & Moreno Mantilla, 2014).

The SMEs recognized the unimpeded supply chain operation as an efficient technique for successful market competitiveness. The present pandemic limited the SMEs' focus on substantial productivity improvements. There is a massive desire to overcome inefficiencies attributed to suppliers' unpredictable customer response, poor performance, and uncertain business environment. Successful firms understand that the transfer of cost upwards or downwards does not make an enterprise competitive since the entire cost is reflected in the price. Hence competition between and among SMEs remains even during the pandemic instead of a cooperative arrangement.

The critical level in acquiring the raw materials for SMEs exposed the difficulty in managing the procurement, storage, movement, services, and related flows of materials to maximize their profitability. Currently, the SMEs failed to shift to attain coordination and linkage between the processes of units in their network. In this case, the SMEs struggle in supply chain management and planning all activities, such as conversion, procurement, and sourcing of all logistic management activities with suppliers. The usual practices and approaches to efficiently integrate distributors, manufacturers, suppliers, and customers to enhance long-term enterprise performance were disrupted.

SMEs' critical supply chain situation in the Davao Region is that they lack the resources and knowledge to manage their logistics requirements effectively. For instance, the current pandemic rearranged the established measure and control on the quality performance of the supply chain. Even the established key performance indicator believed to be formerly effective no longer reflects the essential characteristics critical to enterprise performance. These indicators are now considered incapable of fully capturing the supply chain need of SMEs.

Technical Qualifications

Before the onset of the pandemic, the Philippines experienced the longest job and economic expansion, with notable growth in salary employment, increasing at 4.6 percent annually from 2015 to 2019. The exponential increase in employment shifted workers substantially from the informal sector, and total informal employment was receding for the first time.

The pandemic reduced some of these gains, eliminating a year's 1.7 million wage and salary jobs. Conversely, jobs in the informal sector increased by about 435,000, creating a long and lasting effect on employment. The condition created hysteresis in employment, a phenomenon described as a sizeable temporary shock to the economy that produced a persistent low employment rate though the economy may recover.

Based on the ADB research, the pandemic has three transmission channels on current employment. First are the high number of job seekers, including those school dropouts, those who lost their jobs, and new labor entrants. Unfortunately, those new labor market entrants and longer laid-off workers due to loss of skills are more likely to become less employable in the future. There is a massive reallocation of jobs between sectors. However, job losses happened across most sectors. The worst affected sectors are the recreational services, transportation, food

service, and accommodation, contrary to jobs in communication and technology and other high-skilled services sectors.

As soon as the economy recovers, the lost jobs will return with expectations of employment changes to continue in the medium to long term. The deviation in skills is predicted to increase as workers transition between sectors requiring different skills and experiences.

Third, companies are modifying their business models to rely more on technology, reshaping their workforces and the skills employers demand. Digital transformation and remote working will transform jobs, facilities, processes, and skills, including skills required for higher value-added services. These will further exacerbate the skills mismatch in the labor market.

Aside from the economic chaos the pandemic created in the supply chain, the skilled labor shortage has become an emerging problem with SMEs. The abrupt shift that transformed the labor market became more explicit, with many people resigning just as the economy gradually demanded more workers. Some experts identified the changing demographics, immigration demand for flexible working arrangements s, and better pay as the factors affecting the need for workers. Remarkably, the following sectors, wholesale trade, food services, and accommodation, witnessed the massive resignation of workers.

With many economies experiencing a shortage of workers worsening the global supply chain disruptions, even key industries are struggling to recover momentum due to a shortage of workers or raw materials. The situation disrupts global supply networks and production, resulting in product and service shortages. The potential effect of worker shortage emphasized and highlighted labor shortages which the cause are pre-pandemic. It is erroneous to assume that the lack of skilled workers is merely a symptom of post-lockdown economics. Instead, the problem is the consequence of more fundamental development.

The SMEs in the Davao region upheld the critical supply of qualified, skilled workers. The situation is attributed to the economic recovery, which increased workers and rekindled concern over skilled worker shortages. Among the critical factors are the challenges in filling vacancies impeding SMEs' competitiveness, growth, and service delivery. Regardless, the temporary decline in labor demand during the pandemic worsened for several enterprises that had already experienced pre-existing shortages.

Even before the pandemic, skills shortages attributed to structural problems already existed. The fast economic recovery that might happen preempt the SMEs from expressing their anticipation of an overheated labor market and generated a bottleneck in labor pooling among the SMEs. Currently, SMEs struggle to find workers to fill vacancies with the easing of the pandemic restrictions.

The overall scenario about training engagement of SMEs faces unique challenges associated with training. SMEs regularly encounter more barriers to training than large businesses, implying that obstacles are compounded. These impediments are less time dedicated to training, limited resources, and less understanding of technical training required in their operations. These reflect different characteristics of labor market failures that produce sub-optimal outcomes. For both the SMEs and national economic perspectives, the developments undersupply of skills required to achieve productivity and competitiveness.

Conclusions

The SMEs confronted challenges in the two resource-based factors, factor-based and social capital, during the COVID-19 pandemic. More than half of the SMEs encountered moderate to high challenges in the existing social capital in terms of relationships with banks, insurance, government units, universities, and business associations. Similarly, most SMEs

identified a moderate to high level of critical challenges encountered in factor-based resources, such as access to capital, business intelligence, supply chain, and skilled labor.

This paper extends the effort to better explain the factors of resource-based challenges of SMEs during the COVID-19 pandemic in two fundamental ways. First, the result depicts how the RBT is a beneficial exploration tool for searching and understanding the resource-based challenges of SMEs during a crisis. The RBT demonstrates entrepreneurs involved in the SME's unique awareness of opportunities, the capacity to overcome critical challenges and rivalry between social capital and factor-based resources needed to exploit the opportunity, and the organizational ability to combine two resource-based factors inputs to outputs. Multiple levels of analysis involve significant contributions to the entrepreneurship resource-based theory during pandemics or crises. By evaluating the unique challenges of entrepreneurs, it focuses on two factors, social capital, and factor-based resource, as the two essential elements in the resource-based theory that matters during the pandemic.

Recommendations

The SMEs that require a proactive measure to minimize risk during a pandemic should build and strengthen their social capital through collective, individual, and social relations. Promoting social capital investment extends networks simultaneously for accessing factor-based resources is possible. Specifically, enterprises need to join the local business chamber and associations. Tapping local universities' expertise in technology transfer and financial management significantly improves their leverage against risk. Regarding factor resources, enterprises need more focus on sourcing capital which knowingly becomes a significant challenge during the pandemic. Building capital resiliency is a side-effect of an excellent social network which do not need parallel efforts.

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