ISSN No:-2456-2165

Evaluating the Impact of the Internet on Sales Growth of Aquaculture MSMEs in Lusaka

Mildred Chuunga Muhyila
ZCAS University
P.O. Box 50497RW
Lusaka, Zambia

Dr Egret Chanda Lengwe
ZCAS Professional
P. O. Box 35243
Lusaka, Zambia

Edwin Bbenkele
Prof., ZCAS University
P.O. Box 50497RW
Lusaka, Zambia

Abstract:- The purpose of the study was to investigate the utilization of the internet among aquaculture MSMEs with a view to developing a strategy that could be used to enhance growth in sales and a mono method quantitative study, employing a survey questionnaire of MSMEs in aquaculture in Lusaka. SPSS statistical package version 21 was used in data analysis. Ordinal regression which was used to model the study showed that the model did not show an excellent fit as McFadden value of R-Square showed improvements were far lower than twenty percent. Though the dependent variable, sales growth had increased, the independent variable, the internet, was not worth noting to be a significant predictor of the sales growth increase. There are perhaps other predictors such as education level, gender, experience, age, size and ownership form, that could have had a direct and positive impact.

Keywords:- *Aquaculture, Micro, Small and Medium Enterprise, Sales Growth, Internet.*

I. INTRODUCTION

Post independence, formal employment levels in Zambia have not been adequate, resulting in the establishment of micro, small and medium enterprises (MSMEs) as an alternative means of sustainability (Chisala, 2008). It is notable that MSMEs cut across all sectors of the economy, including aquaculture. Aquaculture, which entails growing fish in earthen ponds or confined artificial water bodies such as concrete ponds or tanks, has been necessitated by the reduction of naturally occurring water bodies in the country attributed to the adverse effects of climate change.

Although aquaculture has been promoted as a means of enabling MSMEs to create employment and reduce poverty thereby improving economic security, this has not been achieved as there is still a deficit in the anticipated output. A 2018 aquaculture survey revealed that a national productivity of 4.1 tonnes per hectare was way below the recommended productivity rate of between 6 to 8 tonnes per hectare (National Assembly of Zambia, 2019). In addition, there has been a high level of mortality rate among MSMEs that had ventured into the aquaculture sub-sector (Maguswi, 1986).

Studies worldwide have revealed that MSMEs that have harnessed technologies such as the internet have been able to enhance their performance (Garcia, 2014; Westerberg, 2008) and have contributed towards employment creation, wealth generation and poverty reduction. Aquaculture MSMEs in African countries such as Egypt, Ghana and Kenya which use the internet in decision making regarding aquaculture practices such as feed management, water quality control, prevention of disease and production planning are able to operate efficiently, enhance their product quality, optimize resource allocation and contribute to the growth of the aquaculture sub sector (Amenyogbe, et al., 2018; ILO, 2021; Obiero et al., 2019).

Silimina (2020) suggested the need for smart agriculture, i.e., the adoption of new technologies as a way to enhance sustainability of aquaculture MSMEs. Literature further reveals that the use of new technologies is the most fundamental source for aquaculture MSME success and survival in today's competitive business environment (Delmar, 2006; Chen et al., 2012 Wiener et al., 2020; Hu et al., 2018 Abdollahi et al., 2021). At the time of developing this study, the researcher was advancing the assumption that non-use of the internet by aquaculture MSMEs in Lusaka, could be the reason for their poor growth in sales.

This article focuses on evaluating the impact of the use of the internet by aquaculture MSMEs in Lusaka and its impact on sales growth with a view of developing a strategy that could be used to enhance performance and growth in sales.

II. RESEARCH OBJECTIVES

- To explore the state of usage of the internet in innovation efforts among MSMEs in the aquaculture sub-sector in Lusaka.
- To assess the impact of the internet in innovation on the growth in sales of MSMEs in the aquaculture sub-sector in Lusaka.

III. RESEARCH QUESTIONS

- What is the state of usage of the internet by aquaculture MSMEs in Lusaka?
- Is internet use a predictor of increase in sales volumes among aquaculture MSMEs?

ISSN No:-2456-2165

IV. METHODOLOGY

Post-positivism philosophy was used with a deductive approach coupled with a survey as a data collection strategy to collect data from 142 randomly selected aquaculture MSMEs using questionnaires. The study was cross-sectional and used quantitative mono method to test the relationship between the independent (the internet) and dependent (sales growth) variable. Ordinal regression, using SPSS Version 21 was used to analyse the data.

V. LITERATURE REVIEW

A. Classification of MSMEs in Zambia

Despite the MSME sector being very researched and documented with their importance very well established globally, they lack a universally accepted definition. It is notable that the definition of MSMEs is nebulous as it varies from one country to another. The definitions may use similar parameters, but the parameters differ from one jurisdiction to another. In Zambia, MSMEs are also defined based on the legal status, total fixed investments, sales turnover, number of employees and registration status but the parameters are different (Ministry of Commerce, Trade and Industry, 2008). Table 1 shows the specific parameters used for classification of MSMEs in Zambia.

TABLE I. CLASSIFICATION OF MSMES IN ZAMBIA

	MICRO	SMALL	MEDIUM
TOTAL FIXED INVESTMENT	K80,000	K80,000 - K200,000	K200,000 – K500,000
ANNUAL SALES TURNOVER	K150,000	K150,000 – K250,000	K300,000 – K800,000
NUMBER OF EMPLOYEES	< 10	11 – 49	51 - 100
LEGAL STATUS	REGISTERED	REGISTERED	REGISTERED

Source: Adapted from Ministry of Commerce, Trade and Industry (2008)

B. Internet use by Aquaculture MSMEs

Aquaculture MSMEs are looking for ways that can help them to remain competitive, innovative, and profitable. The internet incorporates functions that can help aquaculture MSMEs to access and analyze data that will lead them to prosperity. This means that internet use can be adopted as a strategy of business growth. However, this is not the case (Maroufkhani et al., 2020), even though the internet has the potential to grow them as they improve their performance and create new knowledge that can be used to grow the businesses (Shah et al., 2017). Loon and Chik (2019) argue that when SMEs are innovative, when they acquire and use appropriate technology that is efficient and innovative, they will have a better chance of becoming efficient at what they do. However, a relatively low number of MSMEs in developing countries are using the internet (Potter, 2015).

The internet can be used by aquaculture MSMEs for monitoring of their operations, control and surveillance. Internet adoption can bring efficiencies in terms of cost, productivity and innovation and can improve access to searchable knowledge that compensates for limited expert staffing and achieving accuracy as well as helping personnel find what they are looking for more quickly. Given the shortage of experts, the time saved in accessing and loading data is important. It was demonstrated in Norway how the internet capacitated faster decision-making by aquaculture MSMEs because they were able to undertake risk profiling and forecasting effectively and efficiently (Akerkar & Hong, 2021).

C. The Internet

Internet use calls for the development of a 'smart aquaculture management system.' In India for instance, the internet has enabled aquaculture MSMEs to be able to continuously monitor water quality, fish health, and feeding behaviour which has ultimately resulted in an improvement in production yield and profitability (Yadav et al., 2020). Aquaculture entails growing fish in earthen ponds or confined artificial water bodies such as concrete ponds or tanks. The water quality in these ponds and tanks is prone to declining quickly and this can adversely affect the health and growth of the fish hence the need to maintain the correct temperature, pH level, quality supply of oxygen, and dissolved ammonia level.

The internet can be used to create an appropriate fish monitoring system for aquaculture in which the aquaculture MSME can measure the water quality factors and monitor the health of fish in real time. By measuring the most important water parameters, the cost of monitoring the water quality will reduce and ultimately there will be an increase in the production level. Internet enabled devices can be used by aquaculture MSMEs to monitor their operations and be able to maintain satisfactory environment for maximum production, profitability and sustainability (Tamim et al, 2021).

D. Measures of Entrepreneurial Performance

Performance measurement and performance management practices have become common place in all businesses. The knowledge of the association between technology in innovation and performance offers practical insights for proper management of aquaculture MSMEs. Firm performance is a multi-faceted concept, which includes indicators such as survival, profitability, sales growth, number of employees, firm reputation, production, finance or marketing (Wolff & Pett, 2006).

Gerba & Viswanadham (2016) opined that performance can be in terms of both financial and non-financial performance. This would include return on investment (ROI), sales volume and value, profitability, total assets, employment size, capital employed, market share, customer satisfaction, productivity, turnover, delivery time and employee's turnover, etc. The study adopted sales growth as a measure of financial performance.

The use of growth as a measure of firm performance is generally based on the belief that growth is a precursor to the attainment of sustainable competitive advantage and

ISSN No:-2456-2165

profitability. The growth rate of sales plays an important role in an innovative company performance.

E. The Internet and Growth in Sales

The relationship between the use of the internet in innovation and firm growth in sales has been confirmed in both empirical and theoretical studies. Several studies have established a positive relationship between the two variables. For instance, Hajar (2015) in their research regarding the relationship between the use of the internet in innovation and growth in sales of wooden furniture SMEs in Indonesia found that there was a positive effect on growth in sales of SMEs. Another study conducted on the automotive MSME industry in Turkey revealed that the use of the internet in product and process innovation had a positive and significant impact of MSME performance (Atalay, 2013; Kuswantoro, 2012; Sattari, 2013).

Other scholars, such as Calantone et al (2002) also posit that innovation using the internet enhances MSME growth in sales. Calantone et al (2002) examined the relationship between MSME use of the internet in innovation and growth in sales in US based SMEs and found that the use of the internet in innovation improved MSME sales growth. In Kenya and Tanzania, research established that SMEs which adopted the internet in their various operations were able to grow. The studies established a positive relationship between the variables (Mbizi, 2013; Ngungi, 2013; Isaga, 2012).

Carol and Marvis (2007) examined and established the relationship between internet technology in innovation and organizational performance of Taiwanese SMEs in the manufacturing and service sectors. Their study revealed that the adoption of the internet technology in innovation resulted in an increase in terms of sales. Van Auken et al (2008) assessed the relationship between the degree and type of internet technology used in innovation and performance among a sample of 1,901 Spanish manufacturing SMEs and their study revealed evidence of a positive relationship between internet technological innovation of the product, process and managerial/systems and enhanced growth in sales.

Similarly, Garrido and Camarero (2010) investigated the relationship between internet technology in innovativeness and performance and findings of the study reveal that such an undertaking significantly improves growth in sales. Lastly, Terziovski (2010) studied the use of internet technology in innovation practice and its effects on growth in sales of Australian SMEs. The study revealed that internet technology in innovation is a key driver to enhanced growth in sales of SMEs.

The researcher posited that there is a positive link or relationship between the use of internet technology in innovation and enhanced growth in sales; that MSMEs which have adopted new technologies in innovation, have been able to improve their growth in sales and have been able to continue in business. The lack of internet technological innovation by aquaculture MSMEs was the reason for their poor growth in sales and high mortality rate.

VI. RESEARCH FINDINGS AND DISCUSSION

A. Internet Use

The first research question was "What is the state of usage of the internet by aquaculture MSMEs in Lusaka?" The results in Table 1 below show that aquaculture MSMEs generally do not use much of the internet in their businesses as the frequencies of disagreements are more than the frequencies of agreements. Use however, was to some extent associated with promoting businesses online.

TABLE II. PROFILE OF INTERNET USE

Indicator	Completely disagree	Disagree	Somewhat agree	Agree	Completely agree
Internet use for monitoring and measuring customer interest	69	73	-	-	-
Internet use for finding new customer	120	22	-	-	-
Internet use for promoting the business online.	98	6	33	5	-

The expected score for internet use ought to have been values above and equal to 12, the lower limit and 15 being the higher limit.

The mean sample score as shown in Table 3, was 4 (± 0.92 SD) and this is within the range for low expected internet use (3 to 6). However, it was far lower than the lower limit value of the highest range of expected scores (12 to 15).

TABLE III. MEAN OF SAMPLE SCORE

Degree of internet use	Mean	N	Std. Deviation
Low degree of internet use	3.57	127	.913
Moderate degree of internet use	3.73	15	.961
Total	3.49	142	.916

New technology platforms are employing mobile and web-based technologies to create highly interactive platforms through which firms can create, discuss and share information with users and increase business value (Fan and Gordon, 2014) and considering the rapid increase in the use of new technologies in the modern age, volume and complexity of

data due to the emerging advanced technologies and diversity of aqua markets, aquaculture MSMEs must consider applying these in business management.

B. The Internet as a Predictor of Sales Growth

The second research question that was considered was, "Is the internet a predictor of increase in the sales volumes among aquaculture MSMEs?" The data in Table 4 shows that more than half of the aquaculture MSMEs n = 88 (62%) experienced very high and high volumes of sales and n = 31(21.8%) experienced moderate volumes of sales whereas n = 23 (16.2%) experienced very low volumes of sales.

TABLE IV. LEVEL OF SALES IN THE LAST FIVE YEARS

	Frequency	Percent
Low volumes of sales	23	16.2
Moderate volumes of sales	31	21.8
High volumes of sales	69	48.6
Very high volumes of sales	19	13.4
Total	142	100.0

C. Ordinal Regression of Internet Use

The Model Fitting Information for internet use in Table 5 shows that the model is significant as p = 0.021 < 0.05 and this shows that there is a significant improvement in fit as compared to the null model, hence, the model is showing a good fit.

TABLE V. MODEL FITTING INFORMATION FOR INTERNET USE

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	146.392			
Final	131.518	14.873	6	.021

Link function: Logit.

Goodness of Fit statistic indicates a good fit of the data since the significance value p is > 0.05. Here, the significant value would mean that there are significant differences in the observed data and fitted (assumed) model (see Table 21).

TABLE VI. GOODNESS-OF-FIT FOR INTERNET USE

	Chi-Square	Df	Sig.
Pearson	57.167	66	.773
Deviance	62.499	66	.599

Internet use is associated with low improvement in the prediction of sales volume increase for any particular individual aquaculture MSME as McFadden's Pseudo-R-squared values were lower than the normal reference values which ought to be between of 0.2 to 0.4. McFadden value of R-Square for internet use in Table 5 revealed a 4.2% improvement in the prediction of outcome based on the predictors in comparison to the null model. This is not an excellent fit. The low Pseudo R-Square indicates that a model containing internet use is unlikely to be a predictor of the outcome of sales volume increase for any individual aquaculture MSME.

TABLE VII. PSEUDO R-SQUARE FOR INTERNET USE

Cox and Snell	.099
Nagelkerke	.108
McFadden	.042

D. The Impact of Internet Use on Sales Growth

H0 The use of the internet has no significant impact on aquaculture MSME sales growth.

H1 The use of the internet has a significant impact on aquaculture MSME sales growth.

The hypothesis test summary in Table 14 confirms the Ordinal Regression results; therefore, the null hypothesis is retained as $p = 0.322 > 0.05$.

TABLE VIII. HYPOTHESIS TESTING

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Score for internet use is the same across categories of On a scale of 5, indicate the level of sales you have had in the last 5 years.	Independent-Samples Kruskal-Wallis Test	.322	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

E. Discussion of Overall Findings

Firm performance in terms of increase in sales volumes is contingent on numerous predictors. In this study, the internet is not a predictor of the observed increase. There are perhaps other predictors that could have had a direct and positive impact. The following could be influential factors to be observed to increase MSMEs sales volumes; education level (Akinboade, 2015), gender (Cliff, 1998), experience (Asah et al.,2015), firms' characteristics (Grilo, and Thurik, 2006), issues which relate to the decisions made when starting a business (Mahmutaj, and Krasniqi, 2020). Some other factors include age, sector, location, size and ownership form (Smallbone and Welter, 2001).

This study highlights the importance of understanding new technology's potential benefits for better decision making and performance improvement because using new technologies creates many strategic and profitable opportunities for aquaculture MSMEs to succeed in a business ecosystem where competitiveness and innovation are key drivers. Internet technologies are a new opportunity for aquaculture MSMEs to use to improve managerial factors, organizations' agility, solve complex problems, and achieve

better results and performance Mikalef et al. (2019). As a result, fundamental changes can occur in their operations and performance, and consequently, they can move towards more accurate and better information-based decision making and modelling. Therefore, using new technologies is a crucial resource for aquaculture MSMEs to create value, new knowledge, and new processes and products.

When using internet technologies as a resource (Gupta and George, 2016), competitive advantage can be obtained and retained by creating and integrating new technology application capabilities of aquaculture MSMEs. Some studies (Nasrollahi, and Ramezani, 2020; Nasrollahi and Ramezani, 2020 Kopanakis et al., 2016). Anwar et al., 2018; Ogbuokiri et al., 2015; Oncioiu et al., 2019; Mikalef et al., 2019; Yadegaridehkordi et al., 2019) have tried to examine the impact of internet technology adoption on large firm performance, but this theme in MSMEs has been probably neglected. Previous studies have also found the importance and positive effects of financial factors in the adoption of new technology (Tian et al., 2016; Mbassegue et al., Gardoni, 2021).

From the foregoing, the overarching question which needs to be addressed is, "How can growth in sales among MSMEs in the aquaculture sub-sector in Lusaka be enhanced?"

New technologies can be used by small and large enterprises to process such big volume of data and to retrieve meaningful information which leads to business intelligence and decisions. If adopted, new technologies can empower aquaculture MSMEs to initiate and notice new changes in their enterprises by analysing data and making, where possible, correlations between different business elements. Finally, by considering all the empirical facts that have been discussed in this article, new technologies must be recognised as a key factor to make the business of aquaculture MSMEs success stories.

Aquaculture MSMEs themselves need to embark on a cultural change if they are to exploit the market more than they are currently doing. This requires them to investigate data-handling tools and methods outside their small structures and be prepared to use new innovative technologies actively in their decision-making processes. They need to be ready to dive in and explore the growing ocean of information that is waiting for them out there.

In addition, through the existing e-Government initiative, the Ministry of Fisheries and Livestock should consider development of dedicated software and hardware for aquaculture that could be used to train aquaculture MSMEs in the appreciation of new technology.

These strategic directions can contribute to developing aquaculture-beneficial technologies that, in turn, can serve the aquaculture MSMEs in various ways to increase leverage on sales volumes.

VII. CONCLUSION

The research has shown moderate to low use of the internet and that the internet may not be a predictor of sales growth as there are other factors that could have had a direct and positive impact on sales growth. The internet has the potential to significantly impact aquaculture MSMEs in various ways, inter alia, market analysis and customer insights, operational efficiency, risk management, personalized marketing and customer service, financial management and competitive intelligence thereby resulting in enhanced sales growth.

REFERENCES

[1]. Abdollahi, A.; Rejeb, K.; Rejeb, A.; Mostafa, M.M.; Zailani, S. (2021). Wireless Sensor Networks in Agriculture: Insights from Bibliometric Analysis. Sustainability 13, 12011
[2]. Akerkar, R., & Hong, M. (2021). Big Data in Aquaculture. Retrieved from Vestlandsforsking Website: https://www.vestforsk.no
[3]. Akinboade, A. O. (2015). Determinants of SMEs growth and performance in Cameroon's central and littoral provinces' manufacturing and retail sectors. African Journal of Economic and Management Studies 6 (2) 183-196.
[4]. Amenyogbe E, Chen G, Wang Z, Lin M, Lu X, et al. (2018). A Review of Ghana's Aquaculture Industry. Journal of Aquaculture Research and Development 9: 545. doi: 10.4172/2155-9546.1000545
[5]. Anwar, M.; Khan, S.Z.; Shah, S.Z.A. (2018). Big Data Capabilities and Firm's Performance: A Mediating Role of Competitive Advantage. Journal of Information Knowledge and Management 17.
[6]. Asah, F. Fatoki, O. O. and Rungani, E. 2015. The impact of motivations, personal values and management skills on the performance of SMEs in South Africa. African Journal of Economic and Management Studies 6 (3) 308-322.
[7]. Chen, H.; Chiang, R.H.; Storey, V.C. (2012). Business intelligence and analytics: From big data to big impact. MIS Q. 1165–1188.
[8]. Chisala, C. (2008). Unlocking the Potential of Zambian Micro, Small and Medium Enterprises: Learning from the International Best Practices - The Southeast Asain Experience. Retrieved from ResearchGate Website: http://www.researchgate.net
[9]. Cliff, J.E. (1998) Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. Journal of Business Venturing 13 (6) 523-542.
[10]. Delmar, F. (2006). Measuring Growth: Methodological Considerations and Empirical Results. Entreprenuership and the Growth of Firms, 62-86.
[11]. Garcia, A. (2014). Small Business Revenue. International Journal of Business and Economics, 987-994.

[12]. Gerba,T., & Viswanadham,P. (2016). Performance measurement of small scale enterprises: Review of theoretical and empirical literature. International journal of applied research, 2(3): 531-535.
[13]. Grilo, I. M. and Thurik A. R. (2006). Entrepreneurship in the EU: To Wish and not to be. Small Business Economics 26 305–318.
[14]. Gunjan Yadav, Anil Kumar, Sunil Luthra, Jose Arturo Garza-Reyes, Vikas Kumar, Luciano Batista. (2020). A framework to achieve sustainability in manufacturing organisations of developing economies using industry 4.0 technologies' enablers, Computers in Industry, Volume 122, https://doi.org/10.1016/j.compind.2020.103280.
[15]. Gupta, M.; and George, J. (2016). Toward the development of a big data analytics capability. Journal of Information Management. 53: 1049–1064.
[16]. Hu, F.; Liu, W.; Tsai, S.-B.; Gao, J.; Bin, N.; Chen, Q. (2018). An empirical study on visualizing the intellectual structure and hotspots of big data research from a sustainable perspective. Sustainability 10, 667.
[17]. ILO, The Fourth Industrial Revolution, Artificial Intelligence, and the Future of Work in Egypt, International Labour Office – Cairo: ILO, 2021
[18]. Kopanakis, I.; Vassakis, K.; Mastorakis, G. (2016). Big Data in Data-driven innovation: The impact in enterprises' performance. In Proceedings of the 11th Annual MIBES International Conference, Heraklion, Greece, 22–24 : 257–263.
[19]. Loon, M., and Chik, R., Efficiency-centered, innovation-enabling business models of high tech SMEs: evidence from Hong Kong, Asia Pacific Journal of Management, vol. 36, pp. 87-111, 2019.
[20]. Maguswi, C. T. (1986). Aquaculture Research in the Africa Region. African Seminar on Aqauculture (pp. 51-53). Stockholm: Pudoc.
[21]. Mahmutaj, L.R., and Krasniqi, B. (2020). South East European Journal of Economics and Business 15 (1): 27-43.
[22]. Maroufkhani, P., Wan Ismail, W. K., and Ghobakhloo, M., (2020). Big data analytics adoption model for small and medium enterprises, Journal of Science and Technology Policy Management, pp. 10
[23]. Mbassegue, P.; Escandon-Quintanilla, M.L.; Gardoni, M. (2021). Knowledge management and big data: Opportunities and challenges for small and medium enterprises (SME). In Proceedings of the IFIP International Conference on Product Lifecycle Management, Curitiba, Brazil, 11–14 July 2021; Springer: Cham, Switzerland; pp. 22–31.
[24]. Mikalef, P.; Boura, M.; Lekakos, G.; Krogstie, J. (2019). Big data analytics and firm performance: Findings from a mixed-method approach. Journal of Business Research. 98, 261–276.
[25]. Ministry of Commerce, Trade and Industry. (2008). MSME Development Policy of Zambia. Lusaka: Ministry of Commerce, Trade and Industry.
[26]. Nasrollahi, M.; Ramezani, J. A (2020). Model to Evaluate the Organizational Readiness for Big Data Adoption. International Journal of Computing Communities. 15.
[27]. National Assembly of Zambia. (2019). Report of the Comittee Agriculture, Lands and Natural Resources for the Fifth Session of the Twefth National Assembly. Lusaka: National Assembly of Zambia.
[28]. Obiero, Kevin & Waidbacher, H. & Nyawanda, Bryan & Munguti, Jonathan & Manyala, Julius & Kaunda-Arara, Boaz. (2019). Predicting uptake of aquaculture technologies among smallholder fish farmers in Kenya. Aquaculture International. 27. 10.1007/s10499-019-00423-0.
[29]. Ogbuokiri, B.O.; Udanor, C.N.; Agu, M.N. (2015). Implementing bigdata analytics for small and medium enterprise (SME) regional growth. IOSR Journal of Computing Engineering. 17, 35–43.
[30]. Oncioiu, I.; Bunget, O.C.; Türkes, , M.C.; Capusneanu, S.; Topor, D.I.; Tamas, , A.S.; Rakos, , I.-S.; Hint, M. (2019). The Impact of Big Data Analytics on Company Performance in Supply Chain Management. Sustainability 11, 4864.
[31]. Potter, G. J., Big Data Adoption in SMMEs, Tshwane: Gordon Institute of Business Science, University of Pretoria, 2015.
[32]. Shah, S., Bardon Soriano, C., and Coutroubis, A. D., (2017). Is big data for everyone? The challenges of big data adoption in SMEs, Proceedings of the 2017 IEEE IEEM.
[33]. Silimina, D. (2020). Chinese Business Technology Transfer Provides Benefits for Zambia. Retrieved from Chinafrica Website: http://www.chinafrica.cn
[34]. Smallbone, D and Welter, F. (2001). The Distinctiveness of Entrepreneurship in Transition Economies. Small Business Economics 16 (4) 249-262.
[35]. Tamim et al, A. T. (2021). Development of IoT Based Fish Monitoring System for Aquaculture. Intelligent Automation & Soft Computing, 1-17.
[36]. Tian, Z.; Hassan, A.F.S.; Razak, N.H.A. (2016). Big Data and SME financing in China. In Proceedings of the 1st International Conference on Big Data and Cloud Computing (ICoBiC), Perlis, Malaysia, 25–27 November 2017.
[37]. Westerberg, M. (2008). Entrepreneur Characteristics and Management Control. Journal of Business and Entrepreneurship, 20-34.
[38]. Wiener, M.; Saunders, C.; Marabelli, M. (2020). Big-data business models: A critical literature review and multiperspective research framework. Journal of Information and Technology. 35, 66–91
[39]. Wolff, J. A., & Pett, T. L. (2006). Small-Firm Performance: Modeling the Role of the Product and Process Improvements. Journal of Small Business Management, 44, 268-284. https://doi.org/10.1111/j.1540-627X.2006.00167.
[40]. Yadegaridehkordi, E.; Nilashi, M.; Shuib, L.; Nasir, M.H.N.B.M.; Asadi, S.; Samad, S.; Awang, N.F. (2019). The impact of big data on firm performance in hotel industry. Electronic Commerce Research and Applications. doi: https://doi.org/10.1016/j.elerap.2019.100921