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Editorial Office: Rzeszow University of Technology, The Faculty of Management,
10 Powstańców Warszawy Ave., 35-959 Rzeszów, phone: +48 17 8651383, e-mail: kwart_wz@prz.edu.pl
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From the Editorial Committee

We are giving you the next Vol. 27, No. 2(2022) issue of the Quarterly of the Faculty of Management of the Rzeszow University of Technology entitled “Modern Management Review”.

The primary objective of the Quarterly is to promote publishing of the results of scientific research within economic and social issues in economics, law, finance, management, marketing, logistics, as well as politics, corporate history and social sciences.

Our aim is also to raise the merits and the international position of the Quarterly published by our Faculty. That is why we provided foreign Scientific Council, as well as an international team of Reviewers to increase the value of the scientific publications.

The works placed in this issue include many assumptions and decisions, theoretical solutions as well as research results, analyses, comparisons and reflections of the Authors.

We would like to thank all those who contributed to the issue of the Quarterly and we hope that you will enjoy reading this issue.

With compliments
Editorial Committee

MODERN MANAGEMENT REVIEW **2022**
MMR, Vol. 27, No. 2(2022), pp 7-14 **April-June**

Olushola S. AKEKE[1]

EFFECT OF SOCIAL MARKETING ON SUSTAINABLE BEHAVIOUR TOWARDS HOUSEHOLD WASTE DISPOSAL IN LAGOS STATE, NIGERIA

The study seeks to determine the effect of social marketing on sustainable behaviour in the area of household waste disposal in Lagos State, Nigeria. This study focuses on four dimensions of social marketing namely: social product, social price, social promotions and social place. Descriptive research design was employed using cross-sectional survey methods for data collection. Three hundred and ninety one (391) respondents were used for the study. Four research questions were raised and answered through corresponding hypotheses. Data were analyzed using descriptive and inferential statistics. Findings indicated a convincing relationship between sustainable behaviour and social marketing particularly the elements of price and place; and by extension, implications for improvement is that decrease in price associated with waste disposal billings might cause individual household to dispose waste appropriately and more importantly regular maintenance of waste collection site in other to discourage road side waste disposal.

Keywords: social marketing, social product, social price, social promotions, social place, sustainable behaviour.

1. INTRODUCTION

Sustainability necessitates a shift in human behavior (Fischer, Dyball, Fazey, Gross, Dovers, Ehrlich, Brulle, Christensen & Borden, 2012). These improvements are critical for sustainable waste disposal practices, economic growth, and national development. Therefore, it is vital to prioritize issues pertaining to the United Nations' Sustainable Development Goals Agenda 2030, to which the majority of developing nations, including Nigeria, have already committed, notably in the field of waste disposal. Sustainability has been looked at as a proxy for "sustainable development", which is what the World Commission on Environment and Development (1997) commonly refers to as "development that meets the needs of the present without threatening the ability of future generations to meet their own".

Poor waste disposal and drainage system management in Nigeria is largely characterized by the lackadaisical attitudes of Nigerian households, and it is one of the most serious challenges in the country, resulting in considerable health complications and flooding (Beaudoin & Lawell, 2017; Mandy, 2016; Wilson & Cheeseman, 2008). According to the World Health Organization (2015), Sub-Saharan Africa accounts for roughly 35% of all

[1] Olushola S. Akeke, Ph.D Student, Dept. of Business Administration, University of Lagos, Nigeria; e-mail: solomonyz4real@yahoo.com. ORCID: 0000-0003-2877-4801.

home waste disposal problems that can be linked back to uncivilized waste disposal. Every day, approximately 14,000 metric tonnes of urban trash are generated in Lagos State, Nigeria, making waste removal and management a major concern and burden for the entire country (Ministry of Environment & Waste Resources, 2021).

Inconsequence, Mahdee, Bakar, Hassan and Seng (2016) submit that social marketing is the best known tool for addressing issues relating to societal and environmental threats and challenges. Chkanikova (2009) as cited in Kotler and Roberto (1989); conceptualized social marketing as a program planning process that promotes voluntary behaviors of a target audience by offering benefits they desire, minimizing barriers and obstacles they face, and motivating them through persuasion to participate in a program/social cause.

Despite the fact that a variety of explanations have been advanced to account for sustainable behaviour change, the majority of these studies only looked at one aspect of social marketing, namely mass media advertising, and the results were inconsistent, raising the question of whether social marketing is a universal concept or whether it is context specific to the point where its application may be misleading and inappropriate (Tweneboah-Koduah, Mann & Adams, 2019; Sharif, Ibrahim, Ndaghu & Yole, 2018; Truong & Hall, 2013; Attafar, Kazemi & Samimi, 2012; McKenzie-Mohr, 2000). Besides, an ever growing body of literature asserts that social marketing, in conjunction with the marketing mix is one of the most effective approaches to sustainable behavioural change (Attafar et al., 2012; Kennedy, 2016).

Therefore, the extent to which social marketing using the power of social marketing mix, might influence sustainable behaviour change in the area of household waste disposal in developing economies has remained largely unexplored to this day. Taking into consideration this deficiency, the purpose of this study is to investigate the effect of social marketing through the strength of social product, social price, social promotions and social place on sustainable behaviour in the area of household waste disposal in Lagos State. In order to accomplish this objective, the null hypothesized statements were formulated that there is no significant relationship between social marketing and sustainable behaviour towards household waste disposal.

2. LITERATURE REVIEW

2.1. Conceptual Mode

2.1.1. Social Marketing

A wide range of social marketing activities were implemented during the 1960's. They addressed issues such as public health, safe driving practices, drug misuse, tourism and family planning among others (Truong & Hall, 2013; MacFadyen, Stead & Hastings, 1999). When social marketing was first launched as a new discipline in 1971, Philip Kotler and Gerald Zaltman were able to fully appreciate the potentials of the field. Thus, Kotler and Zaltman (1971) being the pioneering authors conceived social marketing as a discipline capable of solving problems and advancing social issues by applying commercial marketing concepts informed by product design, pricing, communication and distribution that are capable of influencing the acceptance of social ideas.

According to Lokhande (2003) the components of social marketing is based on eco-friendly product mix, rational promotional policy, reasonable price of the product, effective and efficient distribution, partnership between organizations and society and sustainable

government policies. Almestahiri, Rundle-Thiele, Parkinson, and Arli (2017) report that social marketing is more than just communication and advertising. It is also about using the commercial marketing mix to create attractive benefits in the form of product design, minimising cost where it is necessary, communicating powerful messages through the media, and establishing an easy and convenient place for exchanges, among other things.

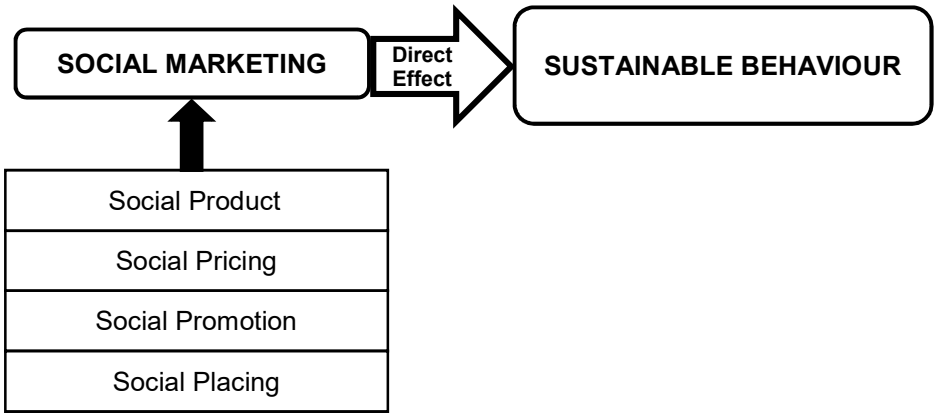

Figure 1. Conceptual Model Showing the Relationship between Social Marketing and Sustainable Behaviour

Source: Conceived by the researcher (2022).

Social Product: In social marketing, the product is not the usual product in commercial marketing but rather the social cause that is being promoted through campaigns among others. Social product could either be an idea, suggestion, thought and/or solution to a social problem, which in the case of this study is sustainable waste disposal behaviour. As the major concern of social marketing is sustainable behaviour change, the product in social marketing reflects the benefits of the behaviour being promoted and encompasses the desired behaviour (Akhtar & Bhattacharjee, 2013). For instance, Kotler and Zaltman (1971) provided the example of safer driving as a social product, which was also labeled as the core product in their discussion. In order to create that social product and achieve the objective of safer driving, various products have to be designed to make partial contribution to achieving safer driving that is the social product. Such products include public education media campaign on safer driving tips, offering courses on defensive driving, designing of insurance policy programmes for safer drivers to reduce premiums. By and Large, the social marketer tries to create a tangible product around the core product (social product) to advance and promote safer driving (social product).

Social Pricing: The pricing in social marketing refers to the cost or pain that the target audience is willing to bear in exchange for refraining from engaging in an unwholesome behaviour (Singaiah & Laskar, 2015). Social price, according to Almestahri, Rundlr-Thiele, Parkinson and Arli (2017) is the cost that the target audience will incur as a result of adopting a proposed behaviour. As reported by Kotler and Zaltman (1971) a social price is a combination of monetary costs, energy costs, and opportunity costs that are associated with a social cause or behavior that the buyer must pay in order to participate in it. In social

marketing, pricing can be typically expressed in monetary and/or non-monetary forms, as appropriate. The non-monetary aspects of social pricing can include time, effort, psychological, cultural and emotional factors, amongst other considerations.

Social Promotions: In social marketing, social promotion is a persuasive communication effort that a social marketer uses to remind and inspire members of the public to take a specific action (Lee & Kotler, 2011). This element and dimension of social marketing is required to facilitate better communication and convey accurate information to the general public. Social promotion encourages the target audience to continue performing an action. Some of the methods used by social promotions to convey messages to the target audience are advertising, public relations, sales promotion, personal selling, social media along with media advocacy (Singaiah & Laskar, 2015).

Social Placing: This is where the target audient is expected to acquire any tangible product associated with the behaviour and perform the desired behaviour (Almestahri et al, 2017). A social marketer must recognize that a service offered in a pleasant and accommodating environment results in a more positive impression and experience for the customer. Social place is used to strategically bring both social marketer and target audience together in order for them to take advantage of the services or engage in the proposed behaviour. It is necessary to consider a variety of factors while selecting a place for social marketing, including the distribution channel, coverage, product assortments, location selection, transportation, and inventory management, among others (Kotler & Keller, 2012; Singaiah & Laskar, 2015).

2.1.2. Sustainable Behaviour

Sustainability have been explored to be representative of sustainable development which according to its commonly used definition by World Commission on Environment and Development (1987) as stated in Miller, De Barros, Kattan and Wirasinghe (2016) is "development" that "satisfies the requirements of the present without endangering the potential to satisfy the needs of future generations". Sustainability demands that there should be positive changes in human/individual behaviour. Issues surrounding Sustainability are often driven by product innovation. That is, sustainability will no longer be an issue, if product and services become environmentally friendly (Antonides, 2017).

3. RESEARCH METHODS

The research design is purely descriptive, employing cross-sectional survey methods for data collection. The population of the study is made up of 37,367 households across ten (10) Local Government in Lagos West Senetorial district. The sample size is arrived at by employing Taro Yamane sample size determination formula putting the sample size at 391. Then multi-stage sampling technique was used to approach the determined sample size. The first stage involves identification of Local Governement Areas across Lagos West Senatorial District, the second stage involves proportional allocation of sample size to each Local Government in Lagos West Senatorial District using proportional allocation formula n1= (nxN1)/N (Bowley, 1926). While the third stage used simple random sampling procedure to obtain household respondent of each Local Government in Lagos West Senatorial District. Adapted structured questionnaire was used to obtain information from respondent across ten (10) Local Government in Lagos West Senatorial District. Data was analyzed using both descriptive and inferential statistic. The descriptive statistic

concentrated on percentages and frequency tables while the inferential statistic focused on multiple regression analyses.

4. TEST OF HYPOTHESES

Following the formulation of the null hypothesis that there is no significant relationship between social marketing and sustainable behaviour in the area of household waste disposal.

The effect of social marketing on sustainable behaviour in the area of household waste disposal is presented in this sub section.

Table 1. shows the model summary of the regression estimates of social marketing on sustainable behaviour. The multiple correlation coefficient (R) of the model is 0.452. The coefficient of determination of the model (R Square) which measures the proportion of the variation in the dependent variable that could be explained by the independent variable is 0.206 while the adjusted R-square is 0.198. The result indicates that social marketing constructs such as product, price, promotions and place explain about 21% in the variation observed in sustainable behaviour of the respondents towards waste disposal.

Table 1. Model summary of the regression estimate

Model	R	R square	Adjusted R square	Std. Error of the estimate
	0.453	0.206	0.198	1.10704
Predictors: constant, place, product, price, promotion,				

Source: (Data Analysis, 2021).

Table 2. is presented from the model analysis to check F-statistics of the model. The result shows that the study regressors, that is social marketing measures significantly predict the sustainable behaviour measure (the dependent variable) in the model ($F(4, 409) = = 26.463, P < 0.005$)). Consequently, the specified model is fit to explain the effect of social marketing on sustainable behaviour in the area of household waste disposal. This further supports the rejection of the null hypothesis and the acceptance of the alternative hypothesis which concludes that there is a significant relationship between social marketing and sustainable behaviour in the area of household waste disposal.

Table 2. ANOVA estimate of the regression model

Model		Sum of Squares	Df	Mean Square	F	Sig
	Regression	129.726	4	32.431	26.463	.000[b]
	Residual	501.243	409	1.226		
	Total	630.969	413			
b. Predictors: (Constant), SMPLACE, SMP, SMPRM, SMPRC						

Source: (Data Analysis, 2021).

The estimated effect of social marketing on sustainable behaviour of household waste disposal is presented in Table 3. The results show that price and place are the most significant social marketing factors influencing sustainable behaviour in the area of waste

disposal. Parameter estimates of product and promotion are negative and statistically not significantly ($p > 0.05$) related to sustainable behaviour. The coefficient of price is positive and significant at 5% level of significance ($\beta = 0.470$, $t = 5.748$, $p < 0.05$). The result indicates that a reduction in the price associated with waste disposal would raise the level of sustainable behaviour of the people by 0.470. This price factors are associated with willingness of individual households to pay for waste disposal, purchase waste bags and charges associated with waste disposal. The result implies that lower waste billing might regulate misbehaviour towards waste disposal.

The coefficient of place is also positive and significantly ($P < 0.05$) associated with sustainable behaviour in the area of waste disposal ($\beta = 0.502$, $P < 0.05$). The result indicates that increase in the regular waste collection site in area and street, massive distribution of waste bags/bins can change peoples' attitude towards disposing waste appropriately.

Table 3. Estimated effect of social marketing

Model	B	Std.Error	T	sig
(Constant)	-0.625	.388	-1.610	.108
Marketing product	-0.003	.003	-1.005	.315
Marketing price	0.470	.082	5.748	.000
Marketing promotion	-.075	.082	-.907	.365
Marketing place	0.502	.080	6.255	.000
Durbin-Watson = 1.907				
R^2 = 0.206				
Adj = .0198				

Source: (Data Analysis, 2021).

5. DISCUSSION OF FINDINGS

The formulated hypothesis sought to investigate the effect of social marketing (social product, social pricing, social promotion and social place) on sustainable behaviour towards household waste disposal.

The result of hypothesis one revealed that social marketing significantly predict the sustainable behaviour of household in the area of waste disposal ($F (4, 409) = 26.463$, $P < 0.005$). These findings corroborate the study of Truong and Hall (2013) that social marketing may perhaps be effective in promoting individual behaviour change for poverty alleviation and sustainable tourism development. More importantly, the findings support the recent study of Tweneboah-Koduah et al. (2020) that the model of social marketing will predict behavioural change of individual households.

5.1. Conclusion

The study found that on the average, majority of the respondent agree that only product and promotions as a measure of social marketing account for variations in behaviour of individual household towards waste disposal. That is, the use of plastic bags and rubbish drums for waste storage and related waste collection activities are agreed to be part of the behaviour associated with waste disposal. Most of the respondents also agree to the need to correct people for improper waste disposal, regulations and penalties, and printing of

campaign materials to raise awareness on waste disposal behaviour. The implication is that, decrease in price associated with waste disposal billings might cause individual household to dispose waste appropriately and more importantly adequate provision of policies and laws to regulate household waste generation, regular maintenance of waste collection site in other to discourage road side waste disposal, and availability of waste bags and bin drums in open spaces.

5.2. Recommendation and Future Research

Academic practitioners and social marketers should focus more attention on the marketing mix theory as a measure of social marketing. More importantly, concentrating more efforts on social pricing and social placing in order to prepare and encourage households towards healthy living and environment that is free of from pollution. Further studies can broaden and improve on this study by carrying it out in order senatorial district of Lagos State and more importantly using qualitative or triangulation research methods to adequately report and understand the behaviour of individual households towards waste disposal in Lagos State.

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Joelina DAVID[1], Nagian TONI[2], Widya SARI[3]

PROFITABILITY ANALYSIS WITH NON-PERFORMING LOAN AS THE MODERATE VARIABLE: THE STUDY CASES OF BANKING COMPANIES IN INDONESIA

This study aims to analyze the effect of bank size and capital adequacy ratio on profitability with non-performing loan ratios as moderating variables in banking companies. This study uses the quantitative research approach with the causality research design. The population of this study is around 45 of the bank's company which was listed on the Indonesia Stock Exchange during 2016–2020 period. The researcher takes only 19 of the bank's company sample with the period of the report for 5 years. The results of the analysis show that the bank size and Capital Adequacy Ratio have a positive and significant effect on profitability in banking companies listed on the Indonesia Stock Exchange during 2016–2020 period by using the bootstrapping method. Then the results analysis of credit risk towards the bank size and Capital Adequacy Ratio are not able to moderate profitability in banking companies that were listed on the Indonesia Stock Exchange during 2016–2020 period by using the bootstrapping method. The conclusion of the research is profitability in the bank's company can be influenced by the size of bank, capital adequacy ratio, and cannot moderate by the credit risk or non-performing loan.

Keywords: the bank size, Capital Adequacy Ratio, profitability, non-performing, loan ratio.

1. INTRODUCTION

The growth and competition that happen in the world of banking, recently experience increasing which made each of the banks must be concerned about the profitability they had. Profitability is important for banks because it can determine their financial performance. Usually, profitability can be measured from the profit that is also known as Return on Asset (ROA). The banks use Return on Asset as an examiner towards the bank's ability to manage the asset they had. Various factors that can influence Return on Assets are the bank size and Capital Adequacy Ratio that moderated as Non-Performing Loan.

[1] Joelina David, SE, Faculty of Economy, Universitas Prima Indonesia, Indonesia; e-mail: davidjoelina@gmail.com. ORCID: 0000-0002-3897-659X.
[2] Nagian Toni, PhD., S.SI, MM, CIMBA, CACP, CIERM., Faculty of Economy, Universitas Prima Indonesia, Indonesia; e-mail: nagiantoni@unprimdn.ac.id (corresponding author). ORCID: 0000--0002-2597-9855.
[3] Widya Sari, S.E., M.Si., Faculty of Economy, Universitas Prima Indonesia, Indonesia; e-mail: widyasari@unprimdn.ac.id. ORCID: 0000-0003-1081-4596.

The profitability can give the influence either large or small banks. The size of the bank can be known from the aspect of total assets. The banks, which have the largest total assets been possible to have high profitability, meanwhile the banks which have the smallest total assets been possible to have low profitability. According to Sartono (2010 cited in Anwar, 2018), profitability is a bank's ability to reach the profit related to the sale activity either from the total productive asset or their own capital. Thus, each of the banks will try to increase their profitability because the higher the profitability level of a company, the easier their life will be guaranteed.

In fact, people prefer to choose the large bank to save their money, because they feel apprehensive towards the small bank will be easily liquidated. Usually, the large bank has a huge amount of credit and high credit risk. Furthermore, the credit risk can be known as a Non-Performing Loan (NPL). In this case, both the large and small bank needs to maintain and keep their level of credit risk in order to remain ideal and accordance with the regulations have been established by Bank Indonesia (BI).

Bank Indonesia (BI) is established the obligation to provide the minimum bank's capital as already regulated in Circular Letter of Bank Indonesia No. 2/12/DPNP/2000 regarding the obligation to provide minimum capital to the banks. The bank's capital can be measured by using the Capital Adequacy Ratio (CAR). The bank which has a high CAR is known as the bank that has the ability to produce the higher profit and minimize the credit risk that often happens in the bank. The increase of Non-Performing Loan (NPL) will give a big impact on the bank charges. In this case, if the banks do not improve their profitability, it will give the capital an impact and it can cause the delay towards the growth of the economy and lack of liquidity.

Table 1. Research Phenomenon (Rupiah)

No.	Issuer Code	Year	Asset Total	Capital	The Profit before Tax	Non-Performing Loan
1	AGRO	2016	11.377.960.721.000	1.966.244.530.000	141.265.512.000	234.368.928.000
		2017	16.325.247.007.000	3.175.341.385.000	193.632.796.000	284.434.697.000
		2018	23,313,671,252,000	4.416.738.376.000	292.509.384.000	447.654.022.000
		2019	27,067,922,912,000	4.580.127.430.000	51.061.421.000	1.482.506.840.000
		2020	28,015,492,262,000	4,305,030,498,000	64,071,757,000	968,070,358,000
2	MEGA	2016	70.531.682.000.000	10.883.111.000.000	1.545.423.000.000	329.799.000.000
		2017	82.297.010.000.000	12.072.553.000.000	1.649.159.000.000	377.865.000.000
		2018	83,761,946,000,000	12.619.668.000.000	2.002.021.000.000	458.672.000.000
		2019	100,803,831,000,000	14.684.721.000.000	2.508.411.000.000	442.849.000.000
		2020	112,202,653,000,000	18,037,950,000,000	3,715,053,000,000	542,758,000,000
3	MCOR	2016	12.257.391.000.000	2.125.425.000.000	79.445.000.000	146.559.000.000
		2017	15.788.738.000.000	2.144.650.000.000	75.317.000.000	246.181.000.000
		2018	15,992,475,000,000	2.263.756.000.000	135.618.000.000	280.098.000.000
		2019	18,893,684,000,000	2.852.953.000.000	112.336.000.000	298.208.000.000
		2020	25,235,573,000,000	5,973,602,000,000	63,703,000,000	371,205,000,000

Source of data: (www.idx.co.id).

Table 1 shows that Bank Rakyat Indonesia Agroniaga Tbk, Bank Mega Tbk, and PT. Bank Windu Kentjana International are experiencing asset total increase during 2016–2020.

Bank Rakyat Indonesia Agroniaga Tbk has an asset total around Rp 27,067,922,912,000 in 2019 that increased from the previous year; with the profit before tax around Rp 51.061.421.000 in 2019 that decreased from the previous year and it has the non-performing loan that happened in 2019 around Rp 1.482.506.840.000 that increased from the previous year. Furthermore, Bank Mega Tbk has a capital around Rp 12.619.668.000.000 increased in 2018 from the previous year; with the non-performing loan around Rp 458.672.000.000 that also increased in 2018 from the previous year. Moreover, PT. Bank Windu Kentjana International Tbk also experience an increase towards the asset total, decreasing the profit before tax and the improvement of non-performing load in 2019.

According to the explanation above, this study is conducted to comprehend the influences of credit giving towards the profitability with the Non-Performing Loan as the bank's moderation in the Indonesia Stock Exchange (IDX) during 2016–2020 period.

2. LITERATURE REVIEW

The profitability ratio is a financial ratio to measure the company's potential income. This financial ratio explains the company's success in carrying out the business through the information of the profit already earned. Furthermore, for small companies; this ratio shows their efficiency in carrying out the company (Sudaryono, 2015). Whereas, according to Toni and Silvia (2021), profitability is a ratio to measure the bank's ability in producing the profit with the total asset ratio towards the company. The management efficiency of the company can produce a profit with the use of asset total, either current or non-current assets. Therefore, it can be known that profitability is the measurement device of a bank's ability to produce profit which the direction focuses on the profit and loss balance of the company. Hence, each of the banks can continue to develop their company and be able to pay their obligations due date.

Types of profitability ratios that often used to measure the bank's ability in producing profit are Return on Asset, Return on Equity, Gross Profit Margin, Operating Profit Margin, and Net Profit Margin. Furthermore, the focus of this study is Return on Asset (ROA) which shows the work of investment in giving the profit that accordance with the goal of investment which is actually the same as the company asset had invested (Wijaya et al., 2021). In addition, Juri et al. (2020) stated that ROA is the ratio of profit before the tax (earnings before tax/EBT) for the last 12 months towards the average of business volume in the same period. According to the definition above, it can be known that Return on Asset (ROA) is the measurement device of a bank's ability in producing the profit with the investment that already invested as the total asset it has. There are factors that can influence ROA such as the bank size and Capital Adequacy Ratio which moderate as Non-Performing Loans. Factors that affected ratio Return on Asset are: cash turnover ratio, accounts receivable turnover ratio, and inventory turnover ratio. The function of cash turnover is to measure the level of adequacy of the company's working capital needed to pay bills and finance sales. Receivable Turnover used to measure how long it takes to collect receivables for a period, it can be known that a high receivables turnover ratio reflects the higher quality of receivables. Inventory Turnover used to measure how many times the funds invested in this inventory rotate in one period.

The bank size can be seen in the total asset of the company. The asset is the economic benefit in the future than expected will be achieved by a business entity as the result of the transaction that had been done in the past. Then, assets have a main characteristic that is

a possibility to give the benefit in the future. The total assets are the amount of current assets, long-term investment, fixed assets, and other assets. In addition, with use of the total asset is intended to obtain the bank size or in other words to acquire the bank size with the use of the total assets (Sunyoto, 2013).

The bank size can be determined the conveniences level of the company in achieving the funds from the capital market and bargaining power in the financial contract. Usually, the large company can choose the funds from various forms of debts including the special offering that is more profitable rather than a small company. The bigger amount of funds which are involved, the more possibility to make the contract that planned in accordance with the preference from both of sides, as the replacement from the use of debt standard contract. (Hermawan, Toni, 2021).

Furthermore, the Capital Adequacy Ratio (CAR) or the measurement device of capital adequacy is a net capital ratio in the banks with the whole of total assets (Hidayati, 2015). Meanwhile, according to the Indonesian Banker Association (IBI) (2016), the capital adequacy ratio is the ratio of Minimum Capital Adequacy requirements that must be fulfilled by Banks, the total minimum is around 8%. Then, Fauzi et al. (2020) stated that the capital adequacy ratio (CAR) is the ratio between the total of capital with the total of Risk-Weighted Asset (RWA). The Risk Weighted Asset is the summation of balance sheet assets and administrative assets. RWA of balance sheet assets is obtained by using the multiply of nominal value and the assets which already involved with the risk weight it has (Hasibuan, 2015).

Then, the bank size and capital adequacy ratio are moderate as the credit risk or well known as Non-Performing Loan. According to Umam (2016), NPL shows the cause's existence of problems that happen in output contraction from the one side and the debts load which increasing because of the interest rate increase the other side; hence, it causes the ability of the company to pay the credit is decreased. The consequences of banks are they must be bear the large amount of NPL. This case, can rises the problem from the credit given to the customer which can trigger the existence of credit risk.

3. RESEARCH METHODOLOGY

This study is used the quantitative research approach with the causality research design. Data is collected from the bank's company which was listed in Indonesia Stock Exchange during 2016–2020 that obtained by entering the site; www.idnfinancial.com. This study is done on the first of May-December 2021. The population of this study is around 45 of the bank's company which listed on Indonesia Stock Exchange during 2016–2020 period. Furthermore, the sample is taken by using purposive sampling as the technique to determine the sample with certain consideration (Sugiyono, 2016), with the criteria of the bank's company that listed in Indonesia Stock Exchange during 2016–2020 period have published the financial report and achieved the profit from 2016–2020 consecutively. Then, from 45 companies it can be decided that only 19 of the bank's company sample with the period of the report for 5 years has been chosen.

Data is collected and analyzed by using Partial Least Square (PSL) with the bootstrapping method or random multiplication. Hence, the normality assumption cannot become the problem for PLS. Besides the relation with the normality data; with the use of bootstrapping, PLS cannot require the minimum number of samples. The technique to

collect the data of this study is used the documentation study that often applies as the document that directs into the obvious evidence and other supporting documents.

Research Hypothesis

Hypothesis 1: The bank size influences profitability.
Hypothesis 2: The capital adequacy ratio influences profitability.
Hypothesis 3: Credit risk moderates the influence of bank size on profitability.
Hypothesis 4: Credit risk moderates the influence of capital adequacy ratio on profitability.

4. RESULT

The bank size

The bank size shows the scale of the large or small bank that listed in Indonesia Stock Exchange during 2016–2020 period from the total assets they had. The bank size is measured with the asset logarithm towards as follows.

Table 2. Descriptive Analysis of the Bank Size from the Bank's Company that listed in Indonesia Stock Exchange during 2016–2020 period

No.	Issuer Code	The Bank Size					
		2016	2017	2018	2019	2020	The average
1	AGRO	30.06	30.42	30.78	30.93	30.96	30.63
2	BBCA	34.15	34.25	34.35	34.45	34.61	34.362
3	BBMD	29.99	30.1	30.12	30.19	30.28	30.136
4	BBNI	34.03	34.2	34.33	34.37	34.42	34.27
5	BBRI	34.54	34.66	34.8	34.89	34.95	34.768
6	BBTN	33	33.2	33.36	33.37	33.52	33.29
7	BDMN	32.79	32.81	32.86	32.9	32.93	32.858
8	BJBR	32.26	32.38	32.42	32.45	32.58	32.418
9	BJTM	31.39	31.57	31.77	31.97	32.06	31.752
10	BMAS	29.33	29.43	29.53	29.66	29.94	29.578
11	BMRI	34.58	34.66	34.72	34.82	34.9	34.736
12	BNBA	29.59	29.58	29.62	29.66	29.66	29.622
13	BNII	32.75	32.79	32.81	32.76	32.79	32.78
14	MCOR	30.14	30.39	30.4	30.57	30.86	30.472
15	MEGA	31.89	32.04	32.06	32.24	32.35	32.116
16	NISP	32.56	32.67	32.79	32.83	32.96	32.762
17	PNBN	32.93	32.99	32.96	32.98	33.02	32.976
18	SDRA	30.75	30.93	31.02	31.24	31.27	31.042
19	BTPN	32.15	32.19	32.26	32.83	32.84	32.454
The average		32.05	32.17	32.26	32.37	32.47	

Source of data processed by the Author (2021).

According to the Table 2 shows that the average value of the company size which was measured with the total assets is experienced fluctuate. The bank size with the higher average is Bank Mandiri Tbk with an average value around 34,736. Then, the bank size with the lowest average value is Bank Maspion Indonesia Tbk with the result average value around 29,578.

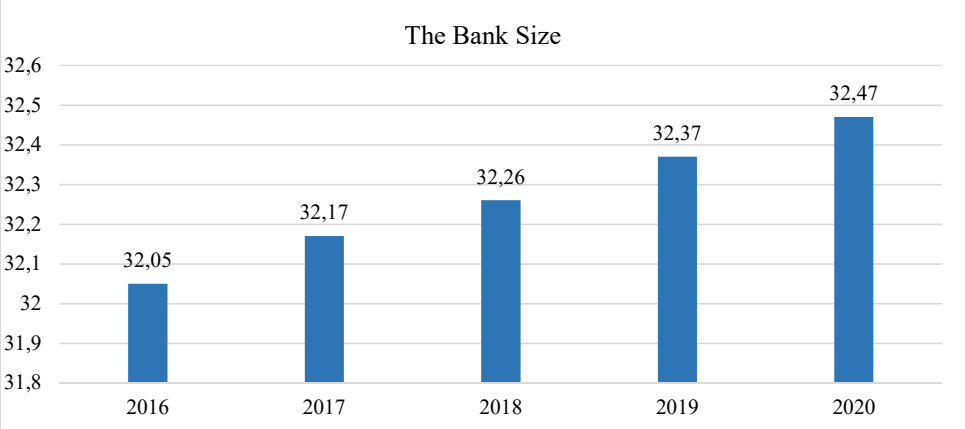

Figure 1. The Development of the Bank Size in the Bank's Company that Listed in Indonesia Stock Exchange

Source of Data processed by the Author (2021).

Figure 1 above shows that the average of the bank size with the total assets of the Bank's company that listed in Indonesia Stock Exchange during 2016–2020 was increased. The average value of the bank size in 2016 was around 32.05, then has increased in 2017 with an average value was around 32.17. Furthermore, in 2018 it has increased with the average value was around 32.36, it is increased in 2019 with an average value around and the bank size in 2020 has also increased was around 32.47. The increase of the bank size that happened is caused by the increase of the total assets owned by the bank's company.

Capital Adequacy Ratio

Capital Adequacy Ratio shows the bank capital of the funds and Risk Weight Assets owned by the bank's company. Then, the capital adequacy ratio can be measured by the ratio of total capital with the risk weight asset. The result of capital adequacy ratio towards the bank's company that listed in Indonesia Stock Exchange during 2016–2020 period can be seen as follows.

According to Table 3, it shows that the average value of capital adequacy ratio which has been measured with the total capital with the risk weight asset is experienced fluctuate. The capital adequacy ratio with the highest average can be found in Bank Mestika Dharma Tbk with an average value around 26.42. Furthermore, the result of capital adequacy ratio with the lowest average can be found in Bank Jabar Banten Tbk with an average value around 18.17.

Table 3. Descriptive Analysis of Capital Adequacy Ratio towards the Bank's Company that listed in Indonesia Stock Exchange during 2016–2020 period

No.	Issuer Code	Capital Adequacy Ratio					
		2016	2017	2018	2019	2020	The average
1	AGRO	23.68	29.58	28.34	24.28	24.33	26.042
2	BBCA	22.21	23.6	23.95	24.64	26.89	24.258
3	BBMD	35.12	35.36	34.58	38.6	47.29	38.19
4	BBNI	22.11	21.15	21.2	19.73	16.78	20.194
5	BBRI	22.91	22.96	21.21	22.55	20.61	22.048
6	BBTN	20.41	18.87	18.21	17.32	19.58	18.878
7	BDMN	22.3	23.24	22.79	24.18	24.98	23.498
8	BJBR	18.43	18.77	18.63	17.71	17.31	18.17
9	BJTM	23.88	24.65	24.21	21.77	21.64	23.23
10	BMAS	24.32	21.59	21.28	20.19	16.53	20.782
11	BMRI	21.36	21.64	20.96	21.39	19.9	21.05
12	BNBA	25.15	25.67	25.52	23.55	25.8	25.138
13	BNII	16.77	17.53	19.04	21.38	24.31	19.806
14	MCOR	19.43	15.75	15.69	17.38	35.28	20.706
15	MEGA	26.21	24.11	22.79	23.68	31.04	25.566
16	NISP	18.28	17.51	17.63	19.17	20.98	18.714
17	PNBN	20.49	21.99	23.33	23.41	29.58	23.76
18	SDRA	17.18	24.86	23.04	20.02	19.99	21.018
19	BTPN	25.03	24.64	25.26	23.51	25.19	24.726
Rata-rata		22.38	22.81	22.51	22.34	24.63	

Source of data processed by the Author (2021).

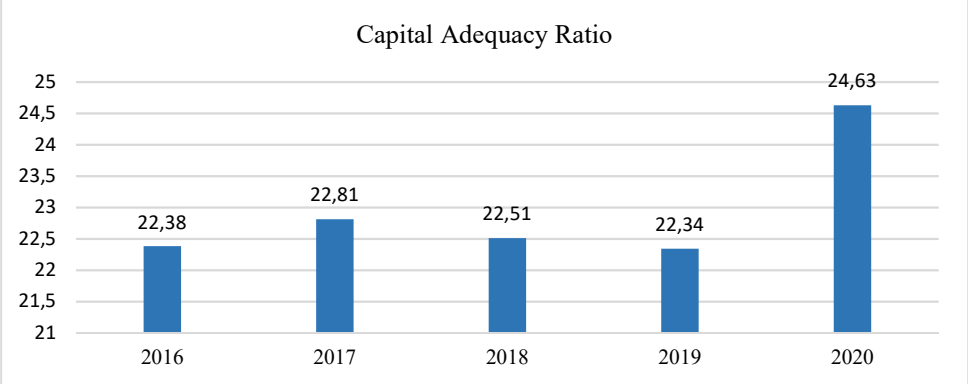

Figure 2. The Growth of Capital Adequacy Ratio towards the Bank's Company that listed in Indonesia Stock Exchange during 2016-2020 period

Source of data processed by the Author (2021).

Then, figure 2 above shows the average capital adequacy ratio which has been measured with the total capital with the risk weight asset toward the bank's company that listed in Indonesia Stock Exchange during 2016–2020 period which experienced increasing and decreasing. The average value of capital adequacy ratio in 2016 around 23.38, then increased in 2017 with an average value around 22.81, but in 2018 it experienced decreasing with an average value around 22.51, it also happened in 2019 which was the capital adequacy ratio is decreased with the average value around 22.51, but in 2020 it was increased with the total value around 24.63. In addition, the increasing and decreasing that happened in capital adequacy ratio can be caused by the increasing or decreasing of the total capital with the risk weight asset owned by the bank's company.

Profitability

Profitability shows the company's ability to produce the company's profit from the assets owned by Bank's company. The variable of profitability in this study is measured by the return on assets. The measurement is the ratio that compares the profit before income tax with the total asset. The result of profitability towards the bank's company that listed in Indonesia Stock Exchange during 2016–2020 can be seen as follows.

Table 4. Descriptive Analysis of Profitability towards the Bank's Company that listed in Indonesia Stock Exchange during 2016–2020 period

No.	Issuer Code	Return On Asset					
		2016	2017	2018	2019	2020	The average
1	AGRO	1.24	1.19	1.25	0.19	0.23	0.82
2	BBCA	3.82	3.89	3.97	3.95	3.12	3.75
3	BBMD	2.27	2.99	2.94	2.56	2.97	2.746
4	BBNI	2.37	2.42	2.45	2.29	0.57	2.02
5	BBRI	3.39	3.29	3.22	3.06	1.77	2.946
6	BBTN	1.55	1.48	1.18	0.13	0.63	0.994
7	BDMN	2.52	3.01	2.64	2.84	1.03	2.408
8	BJBR	1.43	1.42	0.16	1.6	1.54	1.23
9	BJTM	3.37	3.18	2.8	2.43	1.8	2.716
10	BMAS	1.68	1.54	1.42	1.06	0.89	1.318
11	BMRI	1.79	2.41	2.82	2.76	1.63	2.282
12	BNBA	1.5	1.74	1.73	0.93	0.7	1.32
13	BNII	1.57	1.45	1.71	1.54	1.05	1.464
14	MCOR	0.65	0.48	0.85	0.59	0.25	0.564
15	MEGA	2.19	2	2.39	2.49	3.31	2.476
16	NISP	1.7	1.87	2.01	2.15	1.35	1.816
17	PNBN	1.66	1.39	2.21	2.18	1.87	1.862
18	SDRA	1.85	2.2	2.48	1.82	1.82	2.034
19	BTPN	2.85	2.03	2.99	2.21	1.44	2.304
The average		2.07	2.10	2.17	1.94	1.47	

Source of data processed by the Author (2021).

Table 4 shows the average value of Profitability which has been measured with the profit before income tax with the total asset that experienced fluctuation. The highest average of profitability can be found in Bank Central Asia Tbk with an average value around 3.75. Then, the lowest average of profitability can be found in Bank China Construction Bank Indonesia Tbk with an average value around 0.564.

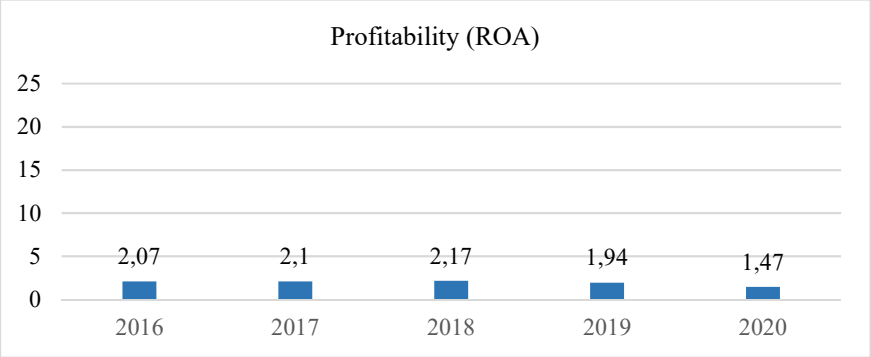

Figure 3. The Growth of Profitability towards the Bank's Company that listed in Indonesia Stock Exchange during 2016-2020 period

Source of data processed by the Author (2021).

Figure 3 shows the average of profitability that has been measured with the profit before income tax and the total asset owned by the bank's company that listed in Indonesia Stock Exchange during 2016-2020 period is experienced increasing and decreasing. The average value of ratio profitability in 2016 is around 2.07, then increased with the average value around 2.10 in 2017, it also increased in 2018 with an average value around 2.17, but in 2018 it decreased with the average value around 1.94, and decreased again in 2020 with the average value around 1.47. Furthermore, the increasing and decreasing of profitability that happened it can be caused by the increasing or decreasing of the profit before income tax and the total asset.

Non-Performing Loan (NPL)

Non-Performing Loan (NPL) shows the impact from the total credit has given to the public. The variable of non-performing loan in this study is measured by the ratio of bad credit with the total credit. The result of non-performing loan towards the Bank's company that listed in Indonesia Stock Exchange during 2016–2020 period can be seen as follows.

Table 4 shows the average value of non-performing loan (NPL) that has been measured by using bad credit and total credit which is experienced fluctuations. The highest average of non-performing loans (NPL) can be found in Bank Rakyat Indonesia Agroniaga Tbk with an average value around 4.206. Furthermore, the lowest average of non-performing loans (NPL) can be found in Bank Tabungan National Tbk with an average value around 0.174.

Table 5. Descriptive Analysis of non-performing loan towards the Bank's company that listed in Indonesia Stock Exchange during 2016–2020 period

No.	Issuer Code	Non Performing Loan (NPL)					
		2016	2017	2018	2019	2020	The Average
1	AGRO	2.87	2.59	2.94	7.66	4.97	4.206
2	BBCA	1.35	1.53	1.45	1.38	1.89	1.52
3	BBMD	2.17	1.39	1.86	0.19	0.59	1.24
4	BBNI	2.34	1.64	0.98	1.3	2.02	1.656
5	BBRI	2.04	2.11	2.16	0.75	0.96	1.604
6	BBTN	2.66	2.53	2.16	2.87	3.78	2.8
7	BDMN	2.35	1.54	2.19	2.21	2.29	2.116
8	BJBR	1.72	1.54	1.68	1.63	1.44	1.602
9	BJTM	4.77	4.59	3.75	0.43	0.71	2.85
10	BMAS	0.81	1.38	2.1	2.27	1.68	1.648
11	BMRI	0.39	0.19	0.29	0.25	0.28	0.28
12	BNBA	1.63	1.26	1.19	1.32	2.44	1.568
13	BNII	2.93	2.08	1.58	2.05	3.3	2.388
14	MCOR	1.78	2.44	2.45	2.15	2.52	2.268
15	MEGA	1.17	1.07	1.09	0.84	1.12	1.058
16	NISP	1.38	1.53	1.07	1.42	0.92	1.264
17	PNBN	2.9	2.88	3.01	3.07	2.99	2.97
18	SDRA	1.53	1.53	1.72	1.02	0.5	1.26
19	BTPN	0.12	0.09	0.25	0.18	0.23	0.174
Rata-rata		1.94	1.78	1.79	1.74	1.82	

Source of data processed by the Author (2021).

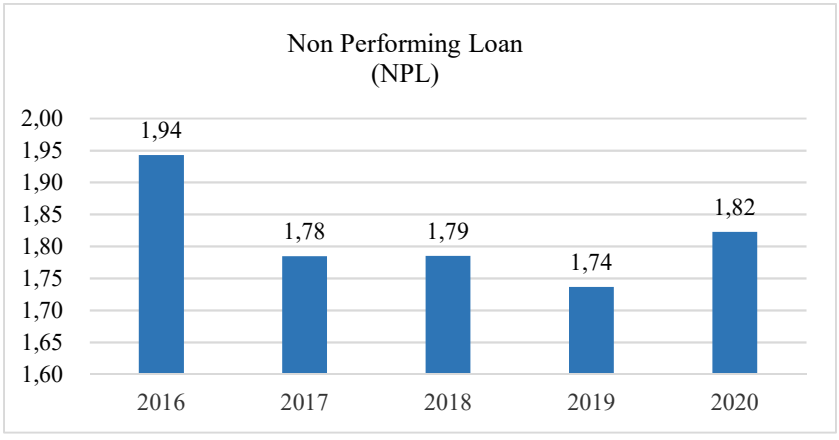

Figure 4. The Growth of Non-Performing Loan (NPL) towards the Bank's Company in Indonesia Stock Exchange during 2016-2020 period

Source of data processed by the Author (2021).

Figure 4 above shows the average of non-performing loans (NPL) that have been measured by using bad credit and total credit towards the Bank's company that was listed in Indonesia Stock Exchange during 2016–2020 period, which is experienced increasing and decreasing. The average value of NPL in 2016 is around 1.94, for the next year in 2017 the average value of NPL is decreased around 1.78, but in 2018 the average value of NPL is increased around 1.78, then the average value of NPL has decreased again around 1.74 in 2019, however the average value of NPL has increased again around 1.82 in 2020. Therefore, the increasing and decreasing of NPL happened because of the increasing or decreasing of bad credit or total credit.

Hypothesis Test Results

The forward analysis that must be done is the hypothesis test towards the data. This analysis is done by using the ratio of T-table value and T-statistics as the result from bootstrapping in Partial Least Square (PLS). Then, the hypothesis has been achieved if the value of T-statistics is higher rather than the value of T-table (95-2 = 93) (1,985) with the significant level around 5% or through the P-value α = 5%, p-val = 0,05. The result of bootstrapping PLS can be seen as follows.

Table 6. Hypothesis Test Results

	Sample Original (O)	Mean Sample (M)	Deviation Standard (STDEV)	T-Statistics (0/STDEV)	P-values
The Bank Size → ROA	0,500	0,509	0,075	6,673	0,000
CAR → ROA	0,470	0,482	0,122	3,847	0,000
NPL → ROA	-0,207	-0,202	0,112	1,840	0,066
Moderating Effect of The Bank Size → ROA	0,086	0,082	0,118	0,732	0,465
Moderating Effect of CAR → ROA	0,071	0,055	0,170	0,421	0,674

Source of data processed by the Author (2021).

According to the Table 6 above, it can be seen that the value of P-values is influence the bank size to the profitability, then the credit risk or NPL influence the profitability is 0,000 which means positive significant influence, and 0,066 which means not significant influence but it has positive direction. Furthermore, the P-value of credit risk or NPL moderating the bank size to the profitability around 0,465 where it was higher rather than 0,05 which means the credit risk or NPL cannot be able to moderate the bank size towards the profitability.

The P-values of credit risk moderating capital adequacy ratio towards the profitability around 0,674 where it was higher rather than 0,05 which means the credit risk or NPL cannot be able to moderate the capital adequacy ratio towards the profitability. Furthermore, it can be seen that the P-values between the influence of capital adequacy ratio to the profitability is 0,000 lower rather than 0,05 which means it can give the positive significant influence.

Hypothesis 1: The bank size influences profitability

According the result analysis in the table 5, it can be seen that df = n-k-1 = 95-2--1 = 92 (1,980). Hypothesis test result influence the bank size with the profitability which has the parameter coefficient around 0,500 with the value significances of T-statistics 6,673 > 1,980 and P-values is 0,000 < 0,05. It shows that the bank size gives the positive significant influences on the profitability.

Hypothesis 2: The capital adequacy ratio influences profitability

Then another result of table 5 shows that the path coefficient between capital adequacy ratio to the profitability has the parameter coefficient around 0,470 with the significances value of T-statistics 3,847 > 1,980 and P-value around 0,000 < 0,05. It shows that the capital adequacy ratios give the significant influence on profitability.

Hypothesis 3: Credit risk moderates the influence of bank size on profitability

Another result from the table 5 shows that the hypothesis test result concerned about the influence of credit risk or NPL moderates the bank size on the profitability has the parameter coefficient around 0,086 with the significances value of T-statistic 0,732 < 1,980 and P-value around 0,465 > 0,05. It indicates that credit risk or NPL was not moderate the influence of bank size on profitability.

Hypothesis 4: Credit risk moderates the influence of capital adequacy ratio on profitability

In addition, the other result analysis shows that the hypothesis result concerned about the influence of credit risk or NPL which moderating capital adequacy ratio on profitability has a parameter coefficient around 0,071 with the significances value of T-statistics around 0,421 < 1,980 and P-values around 0,674 > 0,05. It indicates that the credit risk or NPL was not moderate the capital adequacy ratio on profitability.

5. DISCUSSION

The bank size influences profitability

The result of this study stated that the bank size was given a positive influence and significant on the profitability which means, the bigger the size of the bank the larger profitability will produce. The bank size has the bigger total assets which came from their own capital and the large funds from the third side. With the bigger of total assets, the bank can distribute the large credit; hence it can give an impact on the profitability.

This result is in accordance with the theory proposed by Sunyoto (2013), the company size is measured from the size either big or small of the company. Generally, investors are interested in the big company because they had good management, especially the performance. The investor expects to achieve the highest profit therefore; the investor often chooses the large company. Furthermore, the small company that has been chosen by the investor with the reason easily to be detected by the investor, hence the investor can be observed directly to see the growth of profit or return on the small company.

Then, this result also accordance with the result done by Steven and Toni (2020) that conducted the study about the bank's company that was listed in Indonesia Stock Exchange during 2014–2018 period, with the result that the bank size was given positive influences and significant on the profitability.

According to the explanation above it can be known that the bank size gives a positive influence and significant on the profitability because the big company is relatively more stable and able to produce the profit rather than the small company which can be seen from the assets they had.

The capital adequacy ratio influences profitability

The result analysis stated that the capital adequacy ratio was given a positive influence and significant on the profitability which means the bigger the capital adequacy ratio the larger the profitability is. The bank's company that has bigger capital adequacy ratio reflected the banks which are stable and strong, hence it increases the public confidence to save their money to the bank they had to choose. With the use of their own capitals and the funds from the third side, it shows that the bank had the ability to distribute the larger credit to the debtor side and it can influence the profitability.

This result is in accordance with the theory proposed by Mohammad (2014), generally the bank is an institution that existed with the profit orientation; therefore, to establish the institution, it needs the aspect of strong capital. Furthermore, this result study also in accordance with the previous study by Parasthiwi and Budiasih (2019) which took the data from the Indonesia Stock Exchange during 2013–2017 period to be analyzed. The result of it was the variable of capital adequacy ratio was given positive significant influence on the profitability.

According to the explanation above, it can be known that the capital adequacy ratio was given positive influence and significant on the profitability because the bank's company has the capital adequacy ratio to do their management and operation. The bank's capital came from their own capitals and the funds from the third side. This capital will be used to distribute to the public. The bigger the funds are distributed into a credit with the principle of circumspection, the greater the profitability of the banking sector will be achieved.

Credit risk moderates the influence of bank size on profitability

According to the result of this study, credit risk was not moderate the influence of bank size on profitability because the higher asset the banks had does not mean they had credit risk, hence it cannot impact the increase of profitability.

This result is in accordance with Anggawulan and Suardikha (2021) stated credit risk or NPL was not moderate the bank size to ROA. However, this result is contrary to the study by Dewi (2019) stated that the credit risk or NPL moderated the negative relation between the bank size and ROA from the data which has taken from Indonesia Stock Exchange during 2013–2017 period, with the total of data around 44 companies.

According to the explanation above, it can be known the credit risk was not moderate the influence of bank size on profitability. It can happen because either the large or small banks are able to minimize the credit risk they had, therefore it cannot cause the bank size influence on profitability. It can be seen from the ratio average of credit risk that was listed in Indonesia Stock Exchange during 2016–2020, which is most of the company has the credit risk or NPL less than 5%. This means that regardless of the size of the banking company in Indonesia, if the companies are able to reduce their credit risk, it will not influence the bank size on profitability.

Credit risk moderates the influence of capital adequacy ratio on profitability

The result analysis of credit risk was not moderate influence the capital adequacy ratio on profitability because the bank's company is able to minimize the credit risk. This result is in accordance with the study by Lestari (2019) which showed that the credit risk did not influence the relation between capital adequacy ratios (CAR) with the profitability. It happened because the bigger amount of credit risk in the company the higher the credit risk will be experienced. Furthermore, credit risk or NPL was not influenced the capital adequacy ratio on the profitability because the bank listed on Indonesia Stock Exchange has an average of credit risk or NPL less than 5% (Anggawulan, Suardikha, 2021). According to the explanation above, it can be known that credit risk did not influence the capital adequacy ratio on profitability.

6. CONCLUSION

This study is aimed to know and understand the influence of bank size, capital adequacy ratio, and credit risk or NPL on profitability towards the bank's company listed in the Indonesia Stock Exchange during 2016–2020 period. The result of this study shows that the bank size influences the profitability of the bank's company listed in the Indonesia Stock Exchange during 2016–2020 period. Also, it happened with the capital adequacy ratio which influence the profitability of the bank's company listed on the Indonesia Stock Exchange during 2016–2020 period. Meanwhile, the credit risk was not able to moderate the bank size and capital adequacy ratio on profitability towards the bank's company listed in the Indonesia Stock Exchange during 2016–2020 period. Therefore, it can be concluded that profitability in the bank's company can be influenced by the size of bank, capital adequacy ratio, and cannot moderate by the credit risk or non-performing loan.

In addition, the suggestion for further study is to add the independent variable or replace the variable with another moderate on profitability. Then, the writer also gives the suggestion for further study to do the research for business sectors such as manufacturing companies, real estate/property, other financial companies, and willing to do long research.

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Justin Ogala EGBUNU[1]
Mariusz KMIECIK[2]

INTERNET OF TOMATOES AS A TOOL FOR ADDED VALUE CREATION. THE MODEL BASED ON THE DISTRIBUTION NETWORK IN NIGERIA

Digital transformation, especially the networking of logistics processes, provides more transparency in the supply and distribution chains which improves supply chain management. The main purpose of the following paper is to present the added value improvement, in the implemented idea according to contemporary solution of Logistics 4.0. Chosen solution is Internet of Tomatoes (IoTo) as a one of the kinds of Internet of Things (IoT) tools. This research paper presents the current state of chosen tomatoes distribution network in Nigeria and tries to precise the added value by using a questionnaire result and proposes the mathematical and BPMN 2.0 model for implementing the mentioned solutions. The article also shows some managerial implication of the considered improvement.

Keywords: logistics, value chain, Internet of Things, distribution network.

1. INTRODUCTION

In today's world, digitization and automation have an impact on the logistics industry. Until recently, the World Wide Web was mainly used as a portal to access information and consumption, but now it is currently undergoing a rapid digital transformation towards the idea of "Internet of Things (IoT) and their Services" (Wortmann and Flutcher, 2015). As this development progresses, platforms for "intelligent" products will emerge that connect people, data, and machines not just agriculture but across every sectors. This has significant consequences for the logistics sector, especially regarding the speed, flexibility, and controllability of processes. Against this backdrop, Logistics 4.0 is becoming increasingly important for companies that want to position themselves successfully on the market and to derive value for the process to achieve best result in the favor of producers and consumers (Amr et al., 2019). The fourth industrial revolution, Industry 4.0, enables companies to proceed in digitalizing their operations, as building a flexible organizational structure is a challenge that needs to be addressed and adopting the digital enterprise model is a crucial step towards implementing the new age technologies, as companies must add the elements of flexibility and adaptability to deal with the challenges at hand. Logistics 4.0, a term derived from the combination of Industry 4.0 technologies and innovations and their

[1] Justin Ogala Egbunu, MSc, Eng., graduated from Silesian University of Technology, Zabrze; e-mail: ogalasego@gmail.com
[2] Mariusz Kmiecik, PhD, Eng., Silesian University of Technology, Roosevelta 26, 41-800 Zabrze; e-mail: mariusz.kmiecik@polsl.pl (corresponding author). ORCID ID: 0000-0003-2015-1132.

application on internal and external logistics is a narrower concept than Industry 4.0 (Radivojevic, Milosavljevic, 2019), as it focuses on typical features, such as automation and digitalization. The technologies most utilized are the Internet of Things (IoT), Big Data analytics, Augmented Reality (AR), Unmanned Aerial Vehicles (UAVs) and Advanced Robotics. IoT is the pinnacle of those technologies, as it enables new data streams creation from sources previously being non-exploitable and allows companies to monitor and control mechanizations, fleets etc. by a central system. Big Data analytics provide a powerful tool to companies, as the new data streams generated by IoT produce much greater amounts of data which common software cannot process. Advanced Robotics revolutionize logistics operations due to increasing automation. AR offers numerous advantages for warehouse workers distributors. Lastly, UAVs present a revolutionary technology in many ways as they possess a wide array of applications, such as facility patrolling, warehouse assistance, stock counting and last-mile delivery (Blanco-Novoa et al., 2018).

Digital transformation, especially the networking of logistics processes, provides more transparency in the supply and distribution chains which improves supply chain management. Digitalization particularly improves in the logistics control and implemented on various front of developing logistic value on every item on produced, distributed, and delivered (Seyedghorban et al., 2020). People and machine coherent networking and achieving the great value of digitalization as it associates with the processes. Thus, people control, and nodes coordination will always allow digitalizes logistics to work at a pace where optimum value can be derived, and this will ensure logistics 4.0 works at its best. Some of the main objectives of the fourth industrial revolution can only be achieved if logistics are adapted accordingly. However, companies should consider making fundamental changes to their organizational structures to prioritize the optimization of their logistics operations and add elements such as flexibility and adaptability to insert smoothly into the digital age and implement emerging technologies (Vial, 2019). Logistics 4.0 is not only planned once and then maintained in the same form for all eternity. It is constantly aim at learning new things, constantly adapting to new requirements and is therefore continuously being implemented. Logistics 4.0 focuses on the use of new, innovative technologies, such as forecast-based supply chain management. With this and other new technologies, the following logistical key figures can be optimized (Wang, 2016):

- Delivery reliability: ensuring that delivery is counted upon and can always be trusted to be on time and accuracy as certified.
- Delivery quality: Quality is of integrity and to ensure delivery are always to standardize quality system and standards as agreed.
- Delivery flexibility: Ensure delivery can be change in a process base manner and that it can always meet the trend and new environment or phase changes as situation may be required.
- Ability to deliver: That it can always be counted upon to meet service condition, that to say goods receive will meet customers as schedule.
- Service level: That an agreement which is favorable for the customer and the service team can be drawn up to achieve a permissible relationship

Logistics 4.0 offers a solution, in most cases, as its technologies facilitate greater digitalization and automation in logistics operations, such as the above, thus driving companies towards the digital age with increased capabilities for innovation (Hülsmann, 2015). As a result, Logistics 4.0 can be defined as a data-driven logistics concept in which

individual subsystems intertwine and communicate to create a digital network that enables increased efficiency and productivity (Szymańska, Adamczak, 2017). It operates under the same principles as Industry 4.0, but with different component parts, as it utilizes smart means, such as containers, vehicles, pallets, and transportation systems. By creating the digital network, Logistics 4.0 offers supply chain managers, shippers, drivers, freight forwarders etc. real-time visibility and traceability, thus enabling the optimization of logistics operations, such as warehousing and freight transportation (Hoey, 2018). IoT is the concept widely considerate in current literature, but the usage of IoTo is still under the theoretical considerations with few tries of pilot implementation.

Another revolutionary technology which was briefly mentioned above is IoT and its subsidiary technologies, such as sensor technology, with the ability to connect individual components of the supply chain together into a central system to enable digitalization and optimize processes (Macaulay et al., 2015). IoT enables the creation of multiple data streams which results in a more massive amount of data being available, which deems Big Data analytics the most suitable solution, as it enables real-time data processing of datasets much bigger in variety, velocity, volume, and size, thus optimizing decision making and generating greater insights (Zhou, 2013). IoT allows the interconnection, through Internet, of smart devices that share specific information and data with each other and with other remote digital platforms for real-time decision-making by the user or by other smart devices through machine-to-machine (M2M) communication. The global installed base of IoT devices is expected to rise from 27 billion in 2017 to 64 billion in 2025 according to Business Insider report (2019). Internet of Tomatoes (IoTo) is an Internet of Things (IoT) solution for agriculture. This solution consists of three sections; temperature and humidity sensor node, soil moisture sensor node, and PC or mobile app to control system (Shah and Bhatt, 2017) and it allows the farmers to make a smarter decision (Somov et al., 2018). IoTo solutions could be connected in the future with other nowadays technological support like blockchain technologies (Zhang et al., 2019). Main aim of this paper is the identification of a suitable improved value chain process using easy to use basic IoT devices in-cooperated into Internet of Tomatoes (IoTo) methodologies solely for reducing the high wastages in the yield of tomatoes production through distribution channel across the whole chain in Nigeria thereby adding real value into the existing Logistics value chain. The Customers/end user final gets real value in price and true nutrition on tomatoes purchased and while the framers earn real income on his/her productivity. These make the Nigeria Tomatoes logistics chain competitive and promoting real technological innovation driving it into the new century. To analyzing logistic processes in the chain from harvesting and supply-distribution of choice tomatoes in Nigeria to greatly improve value in the production, and processing of tomatoes/tomatoes products for mass consumption at cheaper rate by mapping an improved logistic process using IoTo devices. These inherently revolve the value chain to meeting key objectives which is real satisfaction for the consumers and economical developed logistics networks of entrepreneurs actively using IoTo to innovate the value chain. The outcome will favorable be low wastages, better pricing, and best earn value on produces push into the chain. Authors will focus on examining the Lakaji corridor in Nigeria and deciphering the logistics network across the corridor with the aid of analyzing the gaps and proffering improves logistics value chain methods. Added value in the following paper is understand as the elements of logistics processes which provides meeting the requirements of final customers.

2. METHODOLOGY

Tomato (Lycopersion esculentium) belongs to the member of the family Solanaceae. The word "tomato" comes from the Nahuatl word tomato, according to Etymology Dictionary, literally known as "the swelling fruit". Tomato is one of the most important vegetables worldwide. It is an important crop that is grown in the tropics for home gardens, family consumptions and processing purposes. It is a native of south-Central America. It was spread to other countries in the 19th century (Tindall, 1983). Tomatoes can be grown in a wide altitude range from the sub-tropical plains through to the high hills, depending on the variety and sowing dates. Agriculture was the mainstay of Nigeria's economy before the discovery of crude oil. According to PWC report from 1960 to 1969, sector accounted for an average of 57.0% of GDP, and generated 64.5% export earnings. From 1970 to late 2000s, the sector's contribution to GDP export earnings steadily declined, because Nigeria's focus shifted to petroleum exploration. Over the past five years, the sector has contributed an average of 23.5% to GDP and generated 5.1% of export earnings. Due to the recent fall in crude oil prices, to merchants, export earnings from crude oil have reduced significantly. This has triggered conversations around the critical role agriculture has to play in diversifying the economy. Tomato is grown in most parts of Nigeria, however the best area is the Savannah Agro-ecological zone, where diseases and pests affecting tomatoes are less common. Major producing areas lie between latitude 7.5ºN and 13ºN and within a temperature range of 25ºC–34ºC. These areas include states in the northern parts namely Bauchi, Benue, Borno, Kano, Kaduna, Plateau, Jigawa and some southern states like Delta, Kwara and Oyo. Tomatoes are warm season crop and are sensitive to high humidity and rainfall. Hence, increases in yield are experienced in well drained, sandy loam, and rich in humus soils. The planting season is between August and September. However, where irrigation farming is practiced, the best time for planting is during the dry season off rainfall months in the year. The combinative ability to collect more data and store it in a trustworthy place allows for restaurants, grocery stores, markets and other food suppliers to better optimize to consumer preferences hence IoTo. This has been observed in developing countries with keen interest towards inclusion advancement using IoT. Proposed research model with research steps is showed in Figure 1.

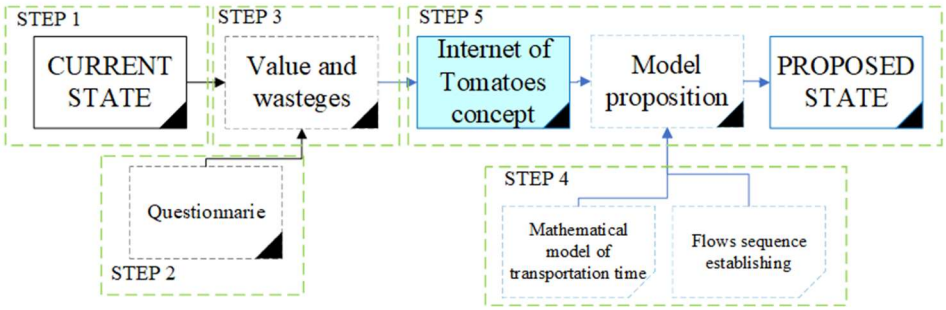

Figure 1. Proposed research model and research steps

Source: own elaboration.

Research starts with precise the current state of tomatoes flows from production yield to customers. This analysis will be focused on value and wastages analysis and will be supported by the results of questionnaire. In the questionnaire, analyzed case of 174 customers from Poland which declare their experience in buying and eating the tomatoes regularly (at least 5 days in week). The research sample of polish customers allows to examine the final customer in the conditions of a long, international supply chains, were the delivery time reduction and providing the best product quality are the biggest issues. Beside this the research sample consist of young customers (up to 30 years old), pointing to the fact of possible beneficiaries of IoTo output technology. After that, a mathematical model and main flows sequences to supported new state proposition were established.

3. RESULTS AND DISCUSSION

Reviewing the flow process on the value chain (Figure 2), the supplies input, tomatoes are first raised in farms bare lands or in advance places, nurseries before transplanting to the field. The input supplies required include seeds, fertilizer, pesticides, nursery supplies, greenhouse, ancillary equipment, etc. Most of the inputs are not produced in Nigeria, making procurement more expensive than what the farmers can afford. The difficulty in accessing inputs and technology makes it impossible for farmers to maximize production. Also, most of them have very small land size, making commercial production impossible.

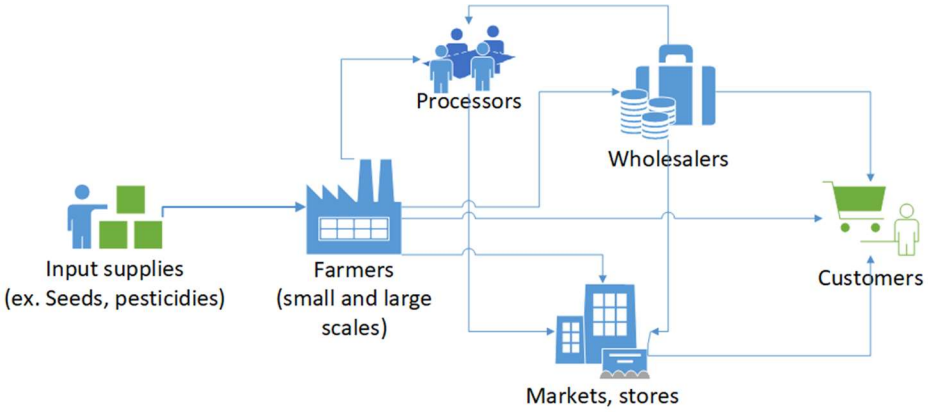

Figure 2. Value chain of tomatoes flow

Source: own elaboration.

The tomatoes logistics chain in Nigeria can be compared with several tomatoes' distribution channel flow across different countries in the global. The Lakaji corridor which is being used as the best model to move tomatoes from Northern-Jibiya to Southern-Lagos in Nigeria is approximately same distance across as; Chicago to Newark in the USA or Burkina Faso-Ouagadougou to Ghana-Tema also in West Africa. Thus, after much of the development, the corridor still lacks many basic infrastructures and rid with under development, these result in years of deterioration of the corridor itself. But in the scope of our research, the corridor has seen the increase of key players toward enhancing tomatoes consumption in Nigeria by increasing the activities and promoting free economics practice

till today. Nigeria is the 14th largest producer of tomato in the world and the 2nd largest Tomato producer in Africa (according to PWC report), with an average of 3.9 million tons per production (FAO, 2014–2018). That is, an average yield of 6.19 ton/ha, compared to the world's average of 38.1 ton/ha and Europe which has an excess of 100 ton/ha.

The questionnaire was aimed at gathering the information about the places where the buyers usually buy tomatoes, the meaning of the delivery time for customer and the meaning of product fully information availability for customers. There were three value questions which define the issues:

- Q1: What place do you prefer to buy tomatoes? (Figure 3),
- Q2: Do you prefer to buy the tomato which delivery time for the market is shorten? (Figure 4),
- Q3: Will you want to have more information about the tomatoes (like for example delivery time, harvest place, supply road) before you buy it? (Figure 5).

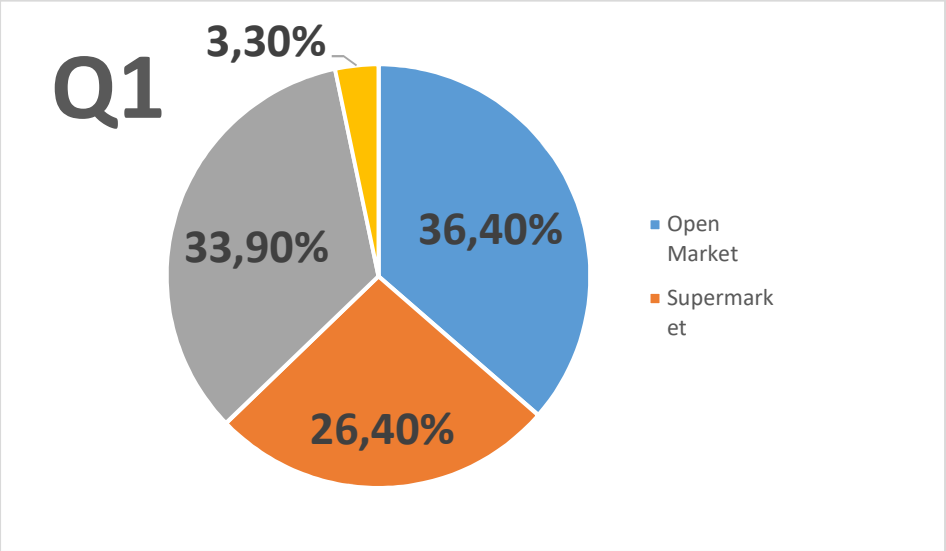

Figure 3 What place do you prefer to buy tomatoes?

Source: own elaboration.

First question is aimed at finding the most favorite location for buying tomatoes. Answers were remarkably similar, so the conclusion is that it is necessary to providing the best solutions and the best deliveries quality in the whole POS (Point of Sales) to ensure the highest level of value in the chain.

Second question was aimed at examining the customers concern about delivery time of the products which there are buying. Majority of responders point towards the delivery time, so it is another step towards focusing the attention in creating the value for customers.

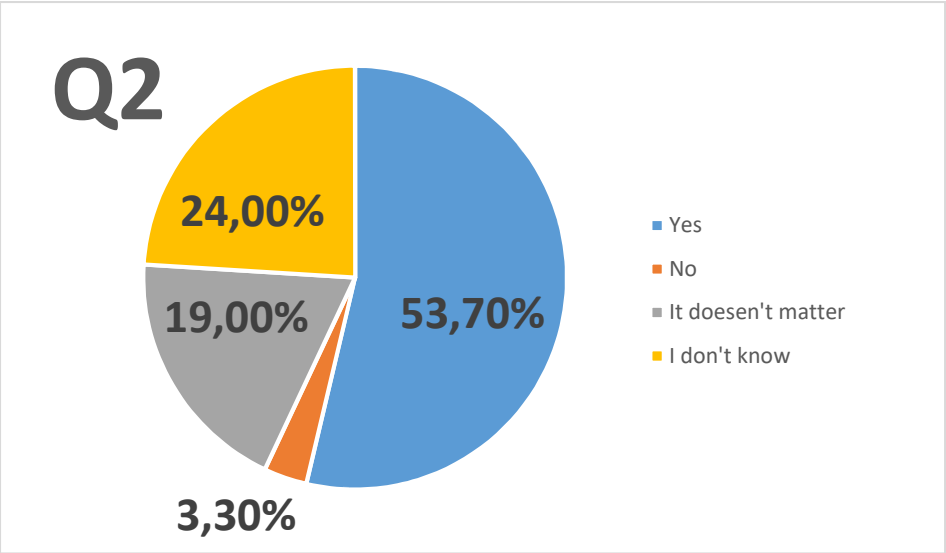

Figure 4. Do you prefer to buy the tomato which delivery time for the market is shorten?
Source: own elaboration.

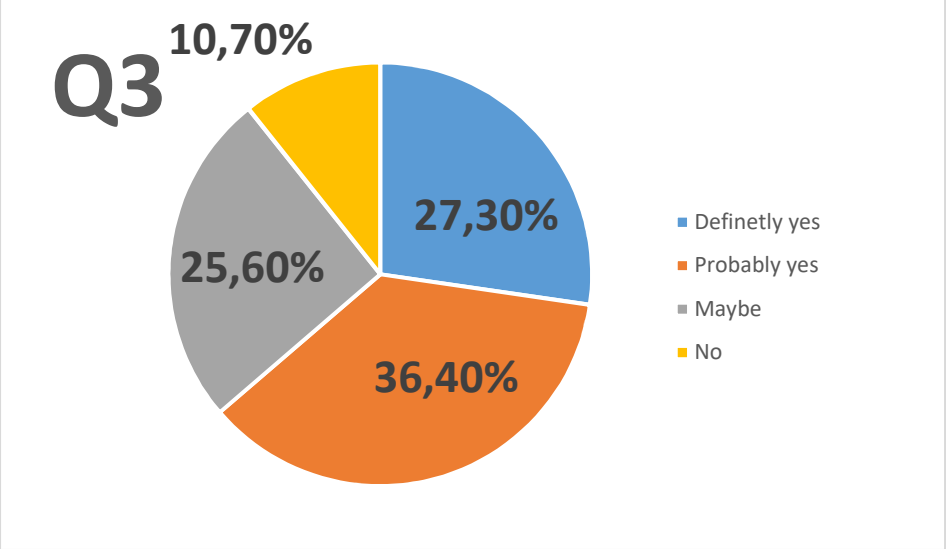

Figure 5. Will you want to have more information about the tomatoes (like for example delivery time, harvest place, supply road) before you buy it?
Source: own elaboration.

Third question was aimed at finding if the customers wants to know more about the product life cycle. In this case it could be concluded that the customers will be glad to have the possibility of checking the food products history before buying them.

At present, various research done has reveal different amounts for tomato losses in the entire value chain. However, sector experts estimate that the annual losses of tomatoes in Nigeria is between 45% – 60% of the total production depending on certain climatic or economic circumstance which might mitigate the result of the losses. Most of the fresh tomatoes produced in Nigeria are sold in the open market in baskets to the middlemen, while roadside vendors sell those sold to the consumers in small plates and baskets. The tomatoes for processing are supplied to the companies in baskets by the same middlemen. However, currently there are no packaging systems for fresh tomatoes, like other countries except for a few big chain supermarkets, where tomatoes are kept in the refrigerator until sold. These could take weeks and tomatoes become overstayed and priced at high value ruin the value chain system. At end they result in no guaranteed pricing regimes and consumer become the bare of fluctuation and absorbed prices with little or no value added, and chain is again ruin. In a twist of turn, Cold storage facilities are not readily available; as such tomatoes intent to be sold fresh must not be stored for long. Tomatoes that have been processed, for example into tomato juice, or dried or pickled can be stored from several months to a few years where interventions are made for them. Tomatoes often need to be stored at different points while they are in transit to a destination. For example, the tomatoes are picked when ripe and stored for a few days in a cool room or most case outdoor space free from heat, after which they are transported to distant markets some place 700–1500 km, but this component of the value chain needs technology input. The transportation part of the value chains of tomato in Nigeria contributes often significantly to losses. The poor conditions of trucks employed in transport, poor road conditions and insufficient/no cold chain solutions by transporters and middlemen have been raised as the main causes. In addition, it is quite expensive to transport products from the North to South of Nigeria, in fact, sector stakeholders indicate that it costs more to move goods within Nigeria than from overseas. Transporters claim that the high costs are due to unnecessary roadblocks and delays food loss in Nigeria by security personal on highways and the high amounts of multiple taxes they are forced to pay before reaching their destination. To further proceed, analysis start with the questionnaire results, in deducing the preferences which will be applied to creation of the flow map, in achieving the solution intended for improving tomato value chain in scope of processing and distribution drivers ahead towards the consumers satisfaction being achieved. These justify the bases for the research embark on the improvement of the Value Chain in the context of the Nigerian market. An overview of tomato wastages shows over 45% (750,000 metric tons) of tomatoes produced in Nigeria is estimated as annual loss due to poor food supply chain management, price instability resulting from seasonal fluctuation in production and the supply preference of farmers and middlemen to urban market than processors due to low farm gate price (FAOSTAT report 2010). Tomato wastage occurs mainly at the processing, packaging, and distribution stages. This is due to the poor processing technology, lack of good storage system and the transporting system used for the distribution of fresh tomatoes. Basically, the heart of the loss recorded can be corrected by process mapping, hence, to rectify these abnormalities using modeling, a keen sense of identifications of these functional variables is needed. The changes as resulted from core logistics functions will inherently introduces the value being rid-out of the chain in the first place. A careful creation of the processes from harvest to the

market with endpoint being the consumer clearly deterred necessary corrective actions. It is estimated that food loss during production can be as much as 15%, and 30% during harvesting, processing, packaging, transportation, and distribution and a 20% at the markets. Existing map of tomatoes flows as pictured is shown in the Figure 6.

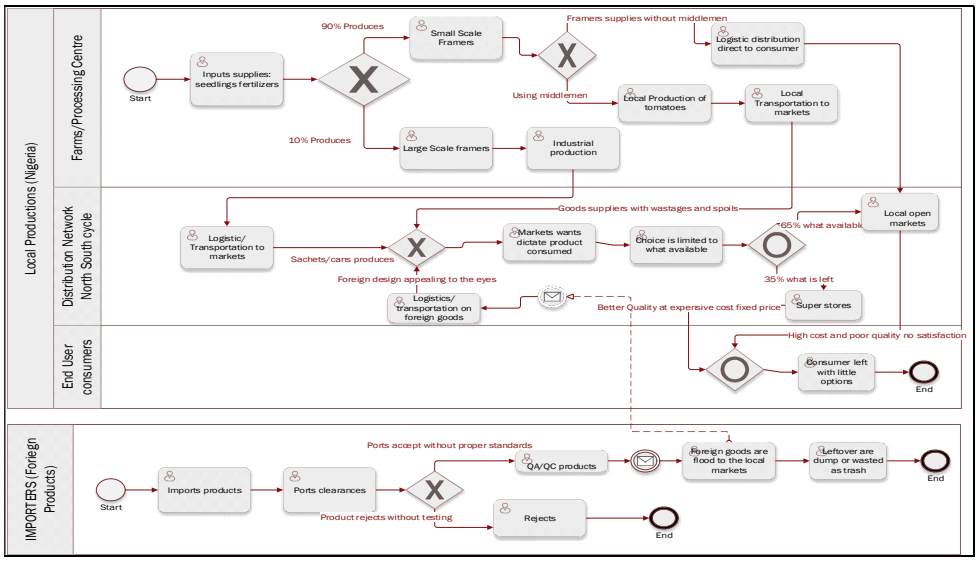

Figure 6. Tomatoes flows chain in BPMN 2.0 – current situation

Source: own elaboration.

Value Chain mapping has always provided the avenue for achieving process improvement on different business cases. These have without doubt being employed across different challenges across the value chain not just Agro-based business in modern societies. As the waste mounts across the chain, it gives a picture of how cost increase rid away all the values to the customer at the end of the chain. Thus, moving forward, to improve this process by adding real value to the customers and minimize the waste as production and distribution is carried out along the chain, creation of a proper map for this improvement will aid in illustrating the process in more clearer terms. The primary areas of wastages in analyzed chain could be divided into two main groups – process and distribution driven losses.

1. The process driven losses were mainly distinguished:
   a. Spoilage or spillage of tomatoes.
   b. Poor quality control check of tomatoes.
2. The distribution driven losses where the main wastes are focused around issues like:
   a. Expiration of tomato products.
   b. Lack of cold chain infrastructure
   c. Exposure to unfavorable environmental conditions-heat

Employing basic calculus in deriving the expression on duration across transport network, we can develop the expression base on the theory postulate on the maximum days

predicted to deliver product before it shelves life. Thus, driving the using basic assumption on the transportation duration Td will be:

$$Td = \text{Max days } m\text{-}t \text{ (Time save)}$$

Assuming that in some case they will be time save on delivery. Thus,

$$Td = m\text{-}t$$

$$\text{So } \sum mmt\ (mt\text{-}t)$$

So, carrying out an integral on the summation between upper(mt) time and lower(m) time to arrival at an expression to speak for the delay, we will have:

$$Td = \int mmt\ (mt\text{-}t)$$

Assuming t save only is 1 which is negligible since it could also be 0. Thus 0-1as forcible limit,

$$Td = \int mmt\ (mt\text{-}t) \approx \int mmt\ mt$$

$$Td = \int (mt\text{-}m)$$

As postulated that it takes average of 15 days to delivery product to end user in case under review, i.e., we shall always be between 0–15 days on duration i.e., ± 15 days totally. But delays are reality, and they occur constantly, so we introduce a d = delays. Our expression becomes:

$$Td = (m\text{-}t) + d$$

But if d is beyond 1 day or unit as case may be, d becomes a multiply of the delays:

$$\sum d = xn * d$$

Where xn = the delays multiply in days or hours & d = xn * d. Thus,

$$Td = (mt - t) + (xn * d)$$

Where: d = xn*d as above. Then,

$$\sum mtm\ ((m\text{-}t) + d)$$

$$Td = \int mtm\ ((m\text{-}t) + d)$$

Thus, if d = xn*d, Assuming the delay multiples by just 1 day
Where xn = 1, d = 1, thus no time saved, t = 0:

$$Td = \int mtm\ ((m\text{-}t) + d)$$

$$Td = \int mtm\ ((m\text{-}0) + 1)$$

$$Td = \int mtm\ ((m) + 1)$$

$$Td = \int mtm\ (m + 1)$$

Thus, our delivery will always be scheduled to end a day after plan arrival on normal events.

Carry further on integral between upper and lower limit on plan days max, m:

$$\int Td = \int mtm\ (m + 1)\ dm$$

$$\int Td = \int mtm\ ((mt\text{-}m) + 1)\ dm$$

$$\int Td = \int mtm\ ((mt\text{-}m) + 1)/1)\ dm$$

$$Td = (mt\text{-}m) + 1$$

And if lower limit m is 0 being initial start day, then Td becomes

$$Td = mt + 1$$

Where: Td = is transportation duration & mt = maximum days attained on plan.

Based on report enabling trade forum on formation to value on action-world economic forum (WEF) deduction can be made on the days on vertical plain verse the temperature on horizontal plain on storage of tomatoes across the shelve life. Tomato in their unprocessed state cannot last so long in their temperate state, hence the need to ensure there are distributed as quick as able to the markets place or the customer who are these end users. Nigeria as a climatic region lie between 25ºC to 35ºC which interpreted from the WEF graph below point to maximum of 7 days on pulled un-ripe tomatoes or 4 days on ripe red tomatoes that can be kept on ground for purchase. Here the essence of tracking shelve life become dined to ensure value is not lost and end users can extract the best benefit from the product on sales. Thus, once distribution and storage/sorting can be close-up in shortness attainable time, i.e., from farm to marketplace/shops, we can expect a sale done under 4 days to close the entire value from Tomatoes supplied. And this will be achieved through use of IoT on first in and first out (FIFO) pricing and value driven process, as products close-in on shelve life it become more cheaper and move more closer to the end-user for consumption. The IoTo system calculate the value on product based of days per shelve life and provide advisory cost with best market to which the products should be sold. It finally anticipates the waste and advise grades and stocks for recycling before products get wasted. Hence, tomatoes are not wasted anymore but sold across IoT channel and as last resort recommend recycling, so the logistic chain is not rid of value flow in and out of the process. A Proposed flows of tomatoes with usage of IoTo conception can be shown in the Figure 7.

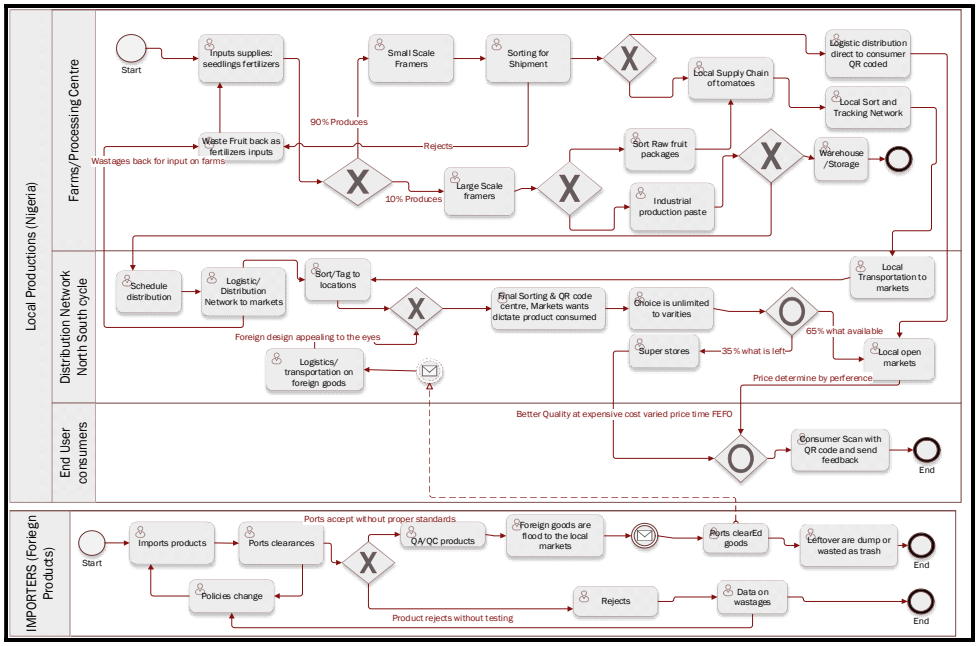

Figure 7. Proposed tomatoes flow with IoTo usage in BPMN 2.0

Source: own elaboration.

4. CONCLUSIONS

The concept of IoTo in logistics value chain can only be first applied when the initial value chain is correctly mapped. With direct focus on Nigeria value chain system and the concept of the Tomato Logistics chain in focus using BPMN reveals how value continues to slip away between the local production and not sparing the imported market in consideration. The entire system is ridicule with wastages and losses and the aftermath is inflation of price on product consumers purchase daily. Alternatively, implementation of an IoT model map, it transforms a wastage process by gathering data at bottlenecks and solve scheduling, distribution, and demand criteria all at once. The acceptance of consolidated deliveries and sending smaller loads to the market through distribution network, make the logistics value chain more efficient as the IoTo framework are introduce in analyzing batches, stocks, suppliers, networks capacities and demand needs at various interval. An example of how concept of (Grzybowska, Łupicka, 2017), management principle is applied as the consolidation point is transform to a Sort, Tagging, and Coding (QR, RFID & Smart code) are introduced to the goods to ensure they reach assigned point. Consolidation and Deconsolidation techniques proof important in resolving distribution. Never forgetting that the premises of the introduction of consolidation point and come with deconsolidation point making the bottleneck fade out and the product cycle becomes easy for the logistics value providers. And at this point, communication across using the IoTo devices, delivers a sufficient data exchange where one can predict and forecast better schedules and distribution across markets and across point of sales in the logistics chain. Main criteria to note, is that the IoTo effectively using existing telecommunication infrastructure and

stakeholder's devices to network and allow logistics value providers to implement flexible approach in price and consumers preferences. In projection, the concept nullified the issues implementing more favorable solution and gathering data need for future policies shaping, price control and above all waste reduction in the Tomatoes Logistics value chain. This concept can be restructure into more other value chains. Traditionally, the most important processing methods of process tomatoes used are concentration (to a paste or purée) and drying either fruit pieces or to a powder finish. Processing allows tomatoes to be kept longer, provides a more varied diet, and means that tomatoes are consumed out of season. For commercial purposes, it is a way of generating extra income and more products are offered to the buyers. Tomato processing has attracted some processing companies to Nigeria. Most of the processing companies are into packaging of concentrates rather than actual processing although a few of them process fresh tomatoes. Above shows that some of the industries are faced with different problems from lack of decent quality fruit for processing to infrastructure problems and lack of processing equipment. Just a few companies such as Dangote Tomato processing factory, Olam Nigeria Ltd., GB foods, Dizengoff have significantly higher revenues and employee size, mostly because they are part of a larger partnering company Group. The bigger companies have competitive advantage given the fact that they can easily raise capital to acquire large farmlands for cultivation, enlarge their processing factory capacity and procure the required equipment and machinery. Thus, most of the tomato products (ketchup, puree, fresh juice, powder, soup) found in the grocery shops are imported. In total, only a few (20%) tomato products are produced in Nigeria, while the majority (80%) are imported (MAN report). Experts maintain that this is due to two reasons, foreign tomato paste is smuggled in from Cameroon and Benin Republic; and tomato supply and processing is still not optimal in Nigeria. But on the other hand, there is an example of India. INI Farms (ag-tech fruit Brand Company) has introduced origin traceability feature for all its fruits in the international and domestic market under the technology program called "FruitRoute". Every fruit under the brand Kimaye, India's leading global fruit brand, can now be traced back to its source by scanning the dynamic QR code on it. So, it could be a reason that the implementation of nowadays solutions based on IoT and IoTo is worthy considerate. IoTo projects where Analog Devices build a complete sensor-to-cloud solution are also using to empowering New England tomato farmers to make smarter decisions during the growing cycle (Somov et al., 2018) and in the future, in the author's opinion, this kind of solution will be used increasingly. However, the productivity and the tasks connected with improvements of operations in production yields and whole supply chains influenced on added value of whole tomatoes distribution processes. The most critical issue is the possibility of time reducing and providing the detailed information about product to customer. Authors are aware of studies limitation. As the most important limitations could be distinguished: small research sample which consists of only one distribution network, the latest trend of reducing the supply chains length (connected with COVID-19 and current geopolitical situation) and simplification of some distribution network parameters which were not considerate in the proposed model (like rapid demand changes and other distribution network disruptions).

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Marcin GĘBAROWSKI[1]

WORLD'S FAIRS IN THE SERVICE OF NATIONAL BRANDING – THE STATE OF RESEARCH, KEY ELEMENTS OF EXHIBITORS' PRESENTATIONS, EXEMPLIFICATION OF IMAGE-BUILDING ACTIVITIES

World's fairs (Expos) are nowadays perceived as so-called mega events, which are attended mainly to build a desired image of exhibiting countries. The article aimed at exploring literature to determine the extent to which the concept in question has been examined by researchers. Furthermore, the author's intention was – based on experience gained during participation in the last Expo editions – to identify the main presentation components which have a bearing on image-related effects. This constitutes a practical implication of this work. Marketing activities performed during universal exhibitions were exemplified based on the exhibition activity of Poland. A literature review demonstrated that Expo did not receive a lot of researchers' attention – especially in terms of creating the image of exhibiting countries. Therefore there is a research gap which should be closed, in particular, in the context of combining expo participants' activity with experience marketing.

Keywords: world's fairs, Expos, national branding, experience marketing, presentation of Poland.

1. INTRODUCTION

The industrial revolution and rapid economic transformation in the 19th century paved the way for an initiative to organise exhibition events enabling to present the past achievements of mankind on a large scale and with the participation of many exhibitors and visitors. The first event of this sort was the Great Exhibition of the Works of Industry of All Nations. It was held in 1851 at the Crystal Palace, a building which could be visited in those times in Hyde Park in London, but which does not exist anymore. Since then, every couple of years and at irregular intervals, various countries have hosted exhibitions devoted to a review of worldwide achievements – both of the entire civilisation and individual countries. The history of world exhibitions began in London, with Expo 2020 Dubai, an event held between October 2021 and March 2022 in the United Arab Emirates (the exhibition was postponed by one year due to the Covid-19 pandemic), being the last one so far.

[1] Marcin Gębarowski, Associate Prof., College of Management Sciences and Quality, Institute of Quality and Product Management Sciences, Cracow University of Economics, Rakowicka 27, 31-510 Cracow; e-mail: marcing.gebarowski@uek.krakow.pl. ORCID: 0000-0003-0722-3314.

Throughout 170 years' history, world exhibitions have been changing their functions, over time becoming – as can be seen while visiting the grounds of contemporary Expos – an important place for building countries' images. Hence this article aims to determine whether the aforesaid function of exhibitions has been reflected in the scholarly literature. Based on the literature review, possible directions for future explorations were identified. In addition, to demonstrate the nature of marketing activities performed during world exhibitions, Poland's exhibition activity was exemplified. Also, means used for building desired images of countries were presented. Furthermore, the author reflected on the usefulness of exhibitions to national branding in the era of further development of electronic communication – in times when countries' offers are presented on the Internet and hence can be quickly and thoroughly analysed.

2. ESSENCE AND DEVELOPMENT OF WORLD EXHIBITIONS

World exhibitions last nowadays six months. They are usually attended by almost 200 countries and international organisations, as well as around 20 million visitors. Since 2000, the event has been held every five years. As already mentioned, the universal exhibition is currently hosted in Dubai, whereas the next event of this sort will be held in Osaka in 2025. The following cities are competing for the right to host the 2030 Expo: Busan, Moscow, Odessa, Riyadh, and Rome. The right to host Expo is granted by the Bureau International des Expositions (BIE), an organisation comprised of 170 member countries. Poland was one of the 31 founding members of the organisation in 1928. So far, 35 universal exhibitions have been held. The name "Expo" was popularised only after more than one hundred years of organising world exhibitions – for the first time in 1958, when the event hosted in Barcelona was referred to by using a combination of the abbreviated name "Expo" and a year. As regards the importance of world exhibitions to national branding activities, it must be noted that nowadays they are considered to be in the top three global events – next to the Summer Olympics and the FIFA World Cup. They are referred to as mega-events in scholarly literature (Sun, Ye, 2010; Lamberti, Noci, Guo, Zhu, 2011; Lee, Kang, Lee, 2013; Deng, Poon, Chan, 2016).

Apart from universal exhibitions, there are also three other types of events held under the auspices of BIE, where exhibitors and visitors from all around the world can meet. The most important of them includes the so-called "Small Expo", i.e. Specialised Expo, which lasts three months, is smaller and its main theme is more homogeneous than during universal exhibitions. The last specialised event was organised in Astana (currently Nur-Sultan) in 2017, whereas the next one will be held either in 2027 or 2028. Five countries have submitted competing candidatures to organise the next Specialised Expo: Belgrade, Malaga, Minnesota, Phuket, and San Carlos de Bariloche. The two other cyclical events arranged by BIE, whose appeal is definitely not so powerful for the image of exhibiting countries, are: Horticultural Expos and Triennale di Milano (both being arts and design exhibitions).

3. WORLD EXHIBITIONS IN SCIENTIFIC RESEARCH

Expos were analysed in scholarly literature in a variety of contexts. Scholars' attention was directed not only to their history in general (Findling, Pelle, 2015), but also to individual exhibitions (e.g. Auerbach, Hoffenberg, 2008; Pluvinge, 2008). World exhibitions were set in a broad economic context (Sun, Ye, 2010). Studies focused on how the organisation of

Expos stimulated the tourist industry (Jauncey, Nadkarni, 2014) and demonstrated their impact on citizens living in host cities (Lamberti, Noci, Guo, Zhu, 2011; Wang, 2014; Vij, Upadhya, Vij, Kumar, 2019]. The analysis also covered the architecture of individual national pavilions (Martínez Calzón, Castañón Jiménez, 2010; Yang, Chen, Jiang, Lu, 2012; Seo, 2017, to name but a few) and of other facilities which have become the symbols of host cities over time (Yang, Chen, Jiang, Lu, 2012). Furthermore, Expo's impact on the growth of such cities was examined (Meyer-Künzel, 2007; Vita, 2022), as well as their revitalisation was discussed (Deng, Poon, 2012; Deng, Poon, Chan, 2016). Focus was placed on the management of exhibition participants' flow (Houdart, 2012; Gu, Xu, Fang, Shi, Lv, Peng, Wang, Song, Xie, 2013) and the organisation of municipal transport (Zhou, Wang, Huang, Sun, 2009; Zhu, 2012). Scholars also examined correlations between exhibitions and sustainable development in the context of the "green cities" concept (Zhang, 2013) and infrastructure built to address exhibitors' and visitors' needs (Zhe, Li, Jing, 2011; Deng, Poon, 2013).

Scholars' attention was concentrated on the marketing aspects of Expos occasionally. Only very few articles referred to the multidimensional nature of the image of exhibitions (Deng, Li, Shen, 2015), their effect on the image of host cities (De Carlo, Canali, Pritchard, Morgan, 2009; Jing, Rong, 2010; Yu, Wang, Seo, 2012; Xue, Chen, Yu, 2012; Lins, Carmo dos Santos, Gotardo, 2018) and host countries (Chen, 2012; Lee, Kim, Lee, Kim, 2014). The motives for participation in exhibitions (Lee, Kang, Lee, 2013) and visitors' experiences (Björner, Berg, 2012) were also discussed. The promotional activity of commercial entities – BIE's partners and exhibition sponsors also attracted scholars' interest (Tran, 2021). However, there were very few scientific publications devoted to marketing. Hence a need arises to conduct further in-depth research into the potential of world exhibitions in relation to various marketing dimensions, including, first and foremost, in the context of creating the image of exhibiting countries taking part in such events.

Polish scholarly literature provides coverage of universal exhibitions, yet only to a limited extent. They were considered merely in a few contexts: a historical context (Drexlerowa, Olszewski, 2005; Jedlińska, 2015), the architecture of exhibition pavilions (Świątek, 2012;.Sykta, 2014a; Sykta, 2014b), an organisational context (Sykta, 2014c), the synergy of exhibition grounds and spatial structures of host cities (Sykta, 2017). Furthermore, the marketing dimension was mentioned in these publications very scarcely, whereas the central focus was directed to the symbolic meaning of expositions (Gębarowski, 2018), dominant themes running through national presentations (Gębarowski, 2016), visitors' experiences (Gębarowski, 2019) and the effects of participation (Gębarowski, 2014).

A review of scholarly literature points to the conclusion that there are no publications relating directly to the usefulness of Expos to the performance of national branding tasks. Hence there is a need to explore the issue in question. This paper identifies the directions of possible research.

4. EVOLUTION OF WORLD EXHIBITION FUNCTIONS

Having analysed information contained in the books and articles included in the bibliography, describing respective world exhibition editions, it may be claimed that over the decades of their organisation, the format in which these events are held has evolved,

their scope has been extended and they have adapted to changing economical, social and political conditions.

As already noticed, the organisation of the first event in London was the consequence of industrial revolution and major transformations taking place in production methods. At every consecutive edition of the exhibition, current economic achievements were presented – not only in respect of individual countries, but also globally. The exhibitions started to be regarded as places where the latest inventions, being sometimes a real breakthrough for the development of humanity, were showed. It was the visitors of universal expositions that for the first time saw a big wheel, a zip, a moving pavement, electricity, a typewriter, a hand-powered washing machine, a dishwasher, a record player, X-ray equipment, a telephone, to name but a few. As several historians consider it, the "golden age" of world exhibitions coincided with the last decades of the nineteenth century and the beginning of the twentieth century. In those times, presentations took the form of national pavilions showing representations of individual countries on a micro scale (Bruno, 2020). In the first half of the 20th century, exhibitors not only continued to display economic and scientific achievements, but also referred to political concepts prevailing in respective countries. The second half of that century was marked by the absence of the former Communist bloc countries (including Poland), resulting from the policy of the Cold War. The last decade of the 20th and the beginning of the present century is the time of presentations orientated mainly towards creating the images of exhibiting countries by references to unique distinctive natural and cultural features, as well as informing that countries are open to foreign visitors (tourists, investors, new inhabitants). Such an approach has been seen until now, however, many presentations made during previous world exhibitions were in line with experience marketing assumptions, providing remarkable long-lasting experiences. With every consecutive edition, exhibiting countries are becoming more and more multimedia-oriented and they appeal to visitors' senses to a greater and greater extent.

In the context of the present Expo, it must be emphasised that, as intended by the BIE, the event is expected to serve important social functions. Its purpose is to raise key issues relating to sustainable development, including to the need for effective environmental protection. The pivotal role of national presentations is gradually changing. Now the attention of politicians, journalists, economic operators and ordinary people is being directed to issues which are of relevance to the future of our generation. This shift has been determined by the official mottoes of previous exhibitions. The slogan for the Shanghai Expo was "Better City – Better Life", whereas for the Milan Expo – "Feeding the Planet, Energy for Life". The motto used during the event hosted by the United Arab Emirates was: "Connecting Minds, Creating the Future". The exhibition motto for the event which will be organised in Osaka will be "Designing Future Society for Our Lives".

5. WORLD EXHIBITIONS AS PLACE FOR CREATING COUNTRY IMAGE – CORE ELEMENTS OF PRESENTATIONS AND EXEMPLIFICATION

In the context of national branding, three elements of national presentations having importance to image-related effects achieved by exhibiting countries must be identified. They include: the external appearance of pavilions, their interior design, and events taking place as part of exhibitions. The architecture of national pavilions is of paramount importance, as it is the original and intriguing appearance of these buildings that encourages

exhibition attendees to visit a given exposition, as well as it inspires journalists to publish numerous media reports. A pavilion prepared for a universal exhibition serves a role of a huge showpiece. An average Expo participant is not able to see all presentations, therefore exhibitors have to effectively compete for visitors' attention – which they can achieve, first and foremost, through an original appearance of pavilions. The interior design of pavilions is also important – e.g. multimedia installations and expositions activating all visitors' senses. The third vital element of presentations is the organisation of diversified, often spectacular, events during national presentations – taking place both inside and in the immediate vicinity of pavilions.

As an example of activities performed at Expos with a view to promoting a country image, the exhibition activity of Poland will be presented. The history of Poland's participation in world exhibitions is not long. This was not only for political reasons, but also due to event rules. From the first event organised by the BIE, it was decided that only national teams were permitted to exhibit. At the initial stage of exhibition development, Poland did not have its statehood. Consequently, domestic artists and creators wishing to participate in exhibitions represented other countries until Poland regained its sovereignty and the Second Polish Republic was proclaimed. Poland had the first opportunity to present itself in Chicago in 1933. That first attempt was a modest beginning of participation in world exhibitions. Nevertheless, Poland built its first structure, which was designed to allow the country to present itself, four years later in Paris. After the Second World War, due to the political situation, Poland did not attend many world exhibitions. This stemmed not only from tensions caused by the Cold War, but also from the fact that in those times Expos were never hosted by Communist countries – the event was organised by such cities as Brussels (1958), Montreal (1967), Osaka (1970). That situation changed in 1989 – the time of transformations. After several decades of Poland's absence, it took part in the 1992 exhibition in Seville, whereas its first independent pavilion was set up in Hanover in 2000. Following that event, Poland presented itself, using its individual structures, in every consecutive universal exhibition, hosted by: Aichi (2005), Shanghai (2010), Milan (2015), Dubai (2021).

The Polish pavilion in Germany had open walls and was supported by steel columns on which a structure made of steel, glass and aluminium was suspended. During the exhibition hosted by Japan, Poland set up a national pavilion whose façade was made of white wicker. Nevertheless, particularly during the last three Expo editions, Polish pavilions, due to their original, unique structures, were among those most frequently visited by exhibition goers and attracted considerable attention of media representatives (fig. 1).

In China, the building with the Polish exposition looked from the outside like a sheet of paper folded several times – resembling a paper ornament, a traditional folk art paper cutting. It was of symbolic importance and embraced motifs well-known not only to Poles, but also the inhabitants of the host country (paper was invented in China and the art of making paper ornaments has a centuries-old tradition there). At night, the illuminated façade resembled a patterned lantern. The Polish pavilion, because of its original appearance, became one of the most recognisable symbols of the 2010 Expo. Its photograph was showed on posters promoting the exhibition (among very few other selected architectural structures). The pavilion could be also often seen in the press and other media. After the end of the exhibition, the structure was awarded a silver medal for the most creative presentation.

Expo 2010 (Shanghai)

Expo 2015 (Milan)

Expo 2020 (Dubai)

Figure 1. Appearance of Poland's pavilions during last three editions of world exhibition

Source: author's own photographs.

In Italy in 2015, Poland's pavilion appeared to be built of several hundreds of wooden apple crates. The motif of crates was also used at stalls put up in front of the pavilion and on the open area – there was some space to sit down under umbrellas showing apple trees in bloom and people entering the exhibition area were welcomed by a board reading: "Enchanted Apple Land". Those who were resting in that place could taste apple juice. The

exhibition route for visitors was exceptional – it started on the first floor, where they had to go through a "magic garden" with plants growing in Polish meadows and orchards including apple trees.

The building erected for the 2020 Expo in Dubai was designed as an open, modular structure, expanding upwards. Visitors entering the pavilion could see a symbolic installation fitted over their heads – a kinetic sculpture representing a flock of birds flying above the ground. The migrating birds were a theme common to the cultures of many nations, including also those living in the Arabian Peninsula. However, the most important aspect of a visit was an invitation extended to Expo visitors to the "Polish table" – the one and only multimedia artistic installation made of raw materials typical of Poland – copper, glass, wood, ceramics and carbon fibre.

6. CONCLUSIONS

The above conclusions, referring to the changed functions of world exhibitions, and the key exposition elements identified in this article are based on the review of literature and direct observations made by the author during the last Expo editions. Nevertheless, they need to be proved empirically by quantitative and qualitative research carried out not only among exhibitors – to examine objectives (which marketing activity at Expos is to reach) and the effectiveness of measures employed (falling within each of the three groups of the aforesaid national presentation elements). Exhibition visitors should also be covered by such research. It seems that crucial importance should be attached to the exploration of how visiting individual expositions affects the image of exhibiting countries. As for visitors, it will be necessary to determine what they expect exhibitors to do – whether e.g. to provide – to a greater extent – entertainment, escapism (immersion), information or aesthetic values. Referring exhibitions to the concept of an exceptional place where experiences are provided should be a particularly interesting research aspect. In scholarly literature on experience marketing, such space is termed experiencescape (cf. Blumenthal, Jensen, 2019; O'Dell, 2005, to name but a few).

What appears to be of relevance is to examine how the recipients of countries' marketing activities currently perceive world exhibitions, given the fact that people are nowadays well anchored in cyberspace. In fact, it is not clear what is the future of Expos in times of the ongoing development of fast, cheap and global electronic communication, when offers of individual countries can be seen on the Internet. However, such communication, when juxtaposed with face-to-face meetings perceived as an intrinsic quality of all exhibition events, must be considered "flat", as it activates only two senses (sight and hearing) of the recipients of marketing activities. In this case, the hybridisation of exhibition events may provide a special context of exploration. The growing phenomenon of combining traditional meetings with a virtual communication platform was accelerated by the Covid-19 pandemic. It may turn out that in post-pandemic times hybrid (syncretic) exhibition events will become an important (or even a dominant) form of meetings between exhibitors and visitors (Gębarowski, 2021).

In times when the Internet was developing extensively, certain scholars raised doubts over the sense of participating in exhibition events (Jones, 2009; Drab, 2011; Ermer, 2013). However, the organisation of universal exhibitions still requires considerable efforts of many people and the provision of substantial funds by exhibiting countries. Indeed, it seems that in marketing nothing can replace direct contact with the other person and his or her

offer, irrespective of whether such an offer concerns ordinary goods, services or territorial products; the contact which is established in the atmosphere of an exceptional feast, with all exhibition event participants' senses being engaged holistically and substantially, often creating memorable experiences.

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Michalene Eva GREBSKI[1], Karolina CZERWIŃSKA[2], Andrzej PACANA[3]

SWOT ANALYSIS OF INDIVIDUAL COMPONENTS WITHIN THE INNOVATIVENESS ECOSYSTEM

The article contains a qualitative assessment of the effectiveness of the individual components with in the innovativeness ecosystem. The aim of the study is to identify key performance indicators in the context of assessing the effectiveness of individual elements of the innovation network. A set of key performance indicators was developed for each of the six identified components of the innovativeness ecosystem in Northeastern Pennsylvania USA. The performance indicators were assessed using a qualitative method in the form of interviews with the key personnel and clients. The article also contains recommendations for managing an innovativeness network. The management of the innovativeness network needs to be based on leveraging strengths to maximize opportunities and minimize threats.

Keywords: SWOT analysis, innovativeness, entrepreneurship, innovativeness ecosystem, entrepreneurship ecosystem.

1. INTRODUCTION

Management of the innovativeness/entrepreneurship network is a very important part of the knowledge-based economy. The author of this article identified six components of innovativeness/entrepreneurship ecosystems. Each component of an ecosystem participates in the development and nurturing of the skills and attributes conducive to innovative behavior. The individual components of the innovativeness network complement each other. Their effectiveness can be assessed by assessing their key performance indicators and conducting a SWOT analysis. This information is needed to effectively manage an innovativeness/entrepreneurship network.

2. AIMS

The aim of the article is the identification of key performance indicators for assessing the effectiveness of the individual components of an innovativeness network. Identifying strengths and weaknesses of the different components of the innovativeness ecosystem allows for more effective management of the network by utilizing strengths to maximize

[1] Michalene Eva Grebski, PhD, Colorado Mesa University, 1100 North Avenue, Grand Junction, CO 81504 USA; e-mail: mgrebski@coloradomesa.edu. ORCID: 0000-0002-3487-4473.
[2] Karolina Czerwińska, MSc, Rzeszow University of Technology, Rzeszów, 12 Powstańców Warszawy Ave., 35-959 Rzeszów; e-mail: k.czerwinska@prz.edu.pl. ORCID: 000-0003-2150-0963.
[3] Andrzej Pacana, Associate Prof., PhD, DSc, Eng., Rzeszow University of Technology, Rzeszów, 12 Powstańców Warszawy Ave., 35-959 Rzeszów, app@prz.edu.pl (corresponding author). ORCID: 0000-0003-1121-6352.

opportunities and minimize threats. Equally important is to identify and assess weaknesses, so that they can be minimized. Minimizing weaknesses also minimize threats and increase opportunities. SWOT analysis can be effectively used for that purpose.

3. SELECTION OF THE RESEARCH SAMPLE

The data for this research project was collected using qualitative methods of assessment in the form of interviews with key personnel and clients of the individual components of the innovativeness network. Some data was also collected using statistical data and records from the individual components of the innovativeness/entrepreneurship

4. LIMITATION OF THE RESEARCH PROJECT

The assessment data for this project was collected in the Northeastern region of Pennsylvania which is a post-coalmining region similar to the Slask Region in Poland. This area was historically very prosperous and became depressed after the closing of the coalmining industry. Presently the region is in the process of restructuring and transferring to a knowledge-based economy. Northeastern Pennsylvania may not be a good representation of the entire country. To find a better representation of the entire country, some further research would be necessary in other regions as well.

5. LITERATURE REVIEW

Today, measures to improve production and organization as well as to introduce innovation-relevant ISO standards are essential if companies are to survive in a competitive and dynamically changing market. These measures can contribute to the achievement of economic, environmental and social objectives, which can, inter alia, contribute to the promotion of sustainable development (Hajduk-Stelmachowicz, 2014; Ostasz et al., 2020; Mentel, Hajduk-Stelmachowicz, 2020).

The literature review related to the role of the individual components of the innovativeness/entrepreneurship ecosystem has proven the importance of the process of the development of the skills and attributes conducive toward innovative behawior (Abreu, 2021; Granstrand et.al., 2020; Grebski and Grebski, 2018; Lee et.al., 2019; Malecki, 2018; Meng and Ma, 2018; Osterwalder et.al., 2019). The study highlights the following elements of the innovation and entrepreneurship ecosystem: Cultural and Ethnic Integration Center, Entrepreneurial Center, Business Incubator Center, Elementary and Secondary Schools, Higher Education Institutions, Local industry. To assess the effectiveness of the innovativeness network, measurable key performance indicators were developed. KPIs are an integral part of the world's best manufacturing practices known as World Class Manufacturing (WCM) (Piasecka-Gluszak, 2017). The KPIs indicate the extent to which the organization pursues operational, tactical or strategic objectives that are critical to its current and future success (Onyemeh et. al., 2016; Rolo et. al., 2014). The key performance indicators were developed following guidelines provided in the literature.(Badawy et.al., 2016; Key, 2018; Pourmohammadi et.al., 2018). After the key performance indicators were assessed, a SWOT analysis was used to identify the strengths, weaknesses, opportunities and threats (Friesner, 2011; Nyarhu and Agyapong, 2011). The main task of the SWOT analysis was to structure and synthesize the knowledge about the analyzed individual components within the innovativeness ecosystem. A literature analysis was also conducted

on the topic of interaction between the components of the innovativeness network.(Czerwinska-Lubszczyk et.al., 2020; Grebski and Grebski, 2019; Grebski and Grebski, 2016; Olkiewicz et.al., 2018; Kuzior et.al., 2021; Wolniak et.al., 2019).

6. EXPERIMENT AND DATA COLLECTION

To access the effectiveness of the individual components of the innovativeness/entrepreneurship network a number of key performance indicators were established. The performance indicators were divided into four categories.

- Social Indicators (Table 1),
- Organizational/Procedural Indicators (Table 2),
- Scientific/Technical Indicators (Table 3),
- Financial Indicators (Table 4).

Some of the key performance indicators apply simultaneously to a few components of the innovativeness ecosystem. The "X" in the tables indicates the correspondence of the indicator to an individual component of the innovativeness ecosystem. The numeral on the top of each table corresponds to the six components of the innovativeness network.

1. Cultural and Ethnic Integration Center.
2. Entrepreneurial Center.
3. Business Incubator Center.
4. Elementary and Secondary Schools.
5. Higher Education Institutions.
6. Local industry.

Table 1. Social key performance indicators

Social Indicators	1	2	3	4	5	6
Decrease in crime rate by adult population	X					
Decrease in crime rate by minors	X					
Decrease in unemployment rate	X					X
Percentage of female participants	X	X		X		
Percentage of participants from low-income families	X	X		X		
Percentage of minority participants		X		X		
Percentage of immigrant participants	X	X		X		
Number of new jobs created by startups			X		X	
Number of students finding internships at startups			X		X	
Number of graduates finding full-time jobs at startups			X		X	X
Unemployment rate	X					X
Average engineering salary					X	X
Average salary of skilled workers						X
Amount of grants received for cooperation with industry			X		X	X

Source: own study based on: (Grebski, 2021).

Table 2. Organizational/procedural key performance indicators

Organizational/Procedural Indicators	1	2	3	4	5	6
Annual number of clients	X	X	X			
Weekly hours of operation	X	X	X			
Number of full-time employees	X	X	X			
Number of volunteers	X	X	X			
Number of innovative projects evaluated annually		X	X		X	
Number of startups during incubation stage			X			
Number of companies in post-incubation stage			X			X
Number of high school students in a local school district				X		
Number of teachers in a local school district				X		
Number of institutions of higher education					X	
Number of Business and Engineering programs in the area					X	X
Number of Business and Engineering students in the area					X	X
Presence of industry-university cooperation			X		X	X
Number of micro and small companies in the area (0-50 employees)						X
Number of mid-size and large companies in the area (50^{+} employees)						X

Source: own study based on: (Grebski, 2021).

Table 3. Scientific/technical key performance indicators

Scientific /Technical Indicators	1	2	3	4	5	6
Annual number of English classes offered	X					
Annual number of professional development and training workshops	X	X	X		X	
Number of university faculty participating in the program	X	X	X			X
Number of volunteers participating in the program	X	X	X			
Number of entries in annual business plan competition	X	X				
Number of university students involved in applied research			X		X	X
Annual number of projects which evolve into startups			X		X	
Annual number of student projects for startups			X		X	
Number of high school students taking entrepreneurial courses				X		
Number of high school students taking dual enrollment classes				X	X	

Table 3 (cont.). Scientific/technical key performance indicators

Scientific /Technical Indicators	1	2	3	4	5	6
Annual number of Engineering and Business students involved in cooperation with industry			X		X	X
Number of university students finding employment with startup companies			X			X
Annual number of grants for industry-university cooperation			X		X	X
Number of research and development companies in the area			X		X	X
Number of business incubator centers in the region			X			
Number of entrepreneurial centers in the region		X				
Annual number of grants for technology transfer			X		X	X

Source: own study based on: (Grebski, 2021).

Table 4. Financial key performance indicators

Financial Indicators	1	2	3	4	5	6
Annual cost of operating cultural and ethnic integration centers	X					
Annual amount of external grants supporting cultural and ethnic integration centers	X					
Annual budget of an entrepreneurial center		X				
Average cost of creating a new job at a business incubator center			X			
Annual budget of a business incubator center			X			
Tax incentives for startup in at incubation stage			X			
Annual level of subsidy for startups from the state			X			
Annual budget for a local school district				X		
Annual cost of education /student				X		
Average tuition cost/student at a university					X	
Average salary for Engineering graduates with a four-year degree					X	X
Grants received for cooperation with industry					X	X
Labor cost in the region						X
Tax incentives for companies in underdeveloped areas.						X

Source: own study based on: (Grebski, 2021).

All the key performance indicators listed in Table 1, Table 2, Table 3 and Table 4 were assessed. The assessment results are available. (Grebski, 2021) Based on the assessment results, a SWOT analysis was conducted as shown in Table 5, Table 6, Table 7 and Table 8 Grebski, 2021). Those tables include the strengths, weaknesses, opportunities and threats of the individual components of innovativeness/entrepreneurship ecosystem.

Table 5. Strengths of individual components of the innovativeness network

Strengths	1	2	3	4	5	6
Reaches wide variety of people	X	X		X	X	
Long hours of operation	X	X	X			
Variety of classes and workshops	X	X			X	
Large number of volunteers	X	X	X			
Large number of innovative projects		X	X			
Involvement of faculty and students			X		X	X
Creates new jobs			X			X
Evaluates business ideas		X	X		X	
Well-funded				X		X
Reaches diverse populations	X	X		X	X	
Partners with state agencies	X	X	X		X	
Internship opportunities			X		X	X
Presence of university programs			X		X	X
Presence of research opportunities			X		X	X

Source: own study.

Table 6. Weaknesses of individual components of the innovativeness network

Weaknesses	1	2	3	4	5	6
High cost of operation	X	X	X			
Too few full-time employees	X	X	X			
Dependence on external funding	X	X	X			
Shortage of well-educated workforce						X
High labor cost						X

Source: own study.

Table 7. Opportunities of individual components of the innovativeness network

Opportunities	1	2	3	4	5	6
Reaches many people	X	X		X	X	
Reduces unemployment	X		X			X
Reduces crime rate	X					
Focuses on minorities, females and immigrants	X					
Stimulus establishment of new businesses and startups	X	X	X		X	
Low cost of creating jobs			X			
Tax incentives for startups			X			
State subsidies for startups			X			
Creates internship opportunities			X		X	X
Creates entrepreneurial courses	X	X	X			
Dual enrollment opportunities				X	X	

Table 7 (cont.). Opportunities of individual components of the innovativeness network

Opportunities	1	2	3	4	5	6
Multidisciplinary entrepreneurial team building project.			X		X	X
Cooperation between university and startups			X		X	
Student projects done for industry			X		X	X
Mentoring students					X	
Student involvement in research activities			X		X	X
Tax incentives for businesses in undeveloped areas						X
Presence of a business incubator centers			X		X	X
Presence of cultural and ethnic integration centers	X					X
Industry-university cooperation			X		X	X
Grants for technology transfer					X	X

Source: own study.

Table 8. Threats of individual components of the innovativeness network

Threats	1	2	3	4	5	6
Limited funding	X	X	X			
Relying on grants and subsidies	X	X	X			
High operating cost	X	X	X			
Traditional approach to education				X		
Limited availability of grants	X	X	X			
Limited availability of financial aid to students					X	
Shortage of Engineering graduates						X
Shortage of qualified workforce						X

Source: own study.

Based on the strengths of the individual components of an innovativeness network, recommendations have been made to maximize the opportunities and minimize the threats. Those recommendations are included in the conclusions.

7. CONCLUSIONS

All the components of the innovativeness network need to cooperate with each other and complement each other. The recommendations based on the SWOT analysis are as follows:

1. Cultural and Ethnic Integration Centers
   - Expand hours of operation including evening and weekends to accommodate the adult population.
   - Accommodate a wide variety of populations including students from elementary schools, high schools and universities as well as the adult population.
   - Charge a small fee for courses and other services to lower the dependency on grants.

2. Entrepreneurial Center
   - Expand training workshops focusing on innovativeness and entrepreneurship.
   - Continue to focus on high school and college students as well as the adult population.
   - Sponsor an annual business plan competition to stimulate the establishment of new businesses in the region.
   - Focus on underrepresented groups (females, minorities and immigrants).
   - Establish small charges for participation in the workshops to minimize the dependency on grants.
3. Business Incubator Centers (BIC)
   - Continue to offer entrepreneurial workshops for the general public.
   - Get more Business faculty and students involved with clients at the BIC.
   - Provide services in evaluating business ideas to the general public as well as high school and college students.
   - Provide internship opportunities for Engineering and Business students as well as faculty.
   - Use tax incentives to accumulate some operating capital to lower the dependency on grants.
4. Elementary and Secondary Schools
   - Modify the curriculum to focus on the development of creativity and innovativeness.
   - Offer entrepreneurial courses in the curriculum.
   - Promote dual enrollment opportunities.
5. Higher Education Institutions
   - Link every capstone design project to the need of a local industry.
   - Promote involvement of Engineering and Business students with an Entrepreneurial Center, Business Incubator Center and local industry.
   - Provide more students with internship opportunities.
6. Local Industry
   - Maintain ongoing cooperation with faculty and students at local universities.
   - Get involved in research and development as well as technology transfer.
   - Provide scholarship opportunities for Engineering and Business students at the local universities.

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Ayoub MESSIKH[1]

THE EFFECT OF ENTREPRENEURIAL SELF-EFFICACY ON THE PERFORMANCE OF SMALL BUSINESSES IN ALGERIA: A CASE STUDY IN SKIKDA

The main purpose of this paper is to examine the effect of entrepreneurial self-efficacy (ESE) as one of the dimensions of entrepreneurial spirit on the performance of Small Enterprises (PSEs) in Skikda, Algeria. Based on a self-administered survey questionnaire, data were collected from a random sample of 136 small enterprises (owners) in Skikda. The study adopted both descriptive and regression analyses to estimate the effect of entrepreneurial self-efficacy. Collected data were analyzed using Statistical Package for Social Sciences (SPSS version 23). The findings demonstrate that self-efficacy significantly affects the performance of Small Enterprises in Skikda. Where 27.7% of the changes in the level of small business performance are caused by the change in entrepreneurial self-efficacy, which is considered a mediocre effect, which can be explained by the presence of other factors affecting the performance of these enterprises. However, the presence of this positive effect calls for focusing on raising the self-efficacy of Algerian entrepreneurs.

Keywords: Entrepreneurial Self-Efficacy, Performance, Small Business, Skikda Algeria.

1. INTRODUCTION

The phenomenon of entrepreneurship currently occupies great and increasing importance at the same time, whether for developed or developing economies, because of its positive effects on economic, social, and even environmental levels, it is considered an important source of wealth, creativity, and job opportunities (Christian, 1993). As Octave Gélinier already pointed out in 1978, just a few years after the first oil shock which marked the end of the glorious thirties:

> The countries, the professions, the companies which innovate and develop are above all those which practice entrepreneurship. The statistics of economic growth, international trade, licenses, patents, and innovations for the last thirty years firmly establish this point: it is expensive to do without an entrepreneur. This view clearly shows that it is necessary to go beyond the strict framework of business creation, to take a full measure of the importance of the entrepreneurial phenomenon in our economies and our societies as well as in our environment (Messikh, 2018).

[1] Ayoub Messikh, Doctor of business management, Lecturer professor, Faculty of Economics, Commerce and management Sciences, Laboratory of Economic, Finance & Management (ECOFIMA), 20 Aout 1955 University, BP 26 el-hadaiek 21000 Skikda – Algeria; e-mail: a.messikh@univ-skikda.dz. ORCID: 0000-0002-2088-4486.

Considering that the majority of contemporary researchers specializing in business administration, such as “Gilder”, consider that the entrepreneur is the owner and organizer of the small and medium enterprise (SME), this type of institution has been closely associated with entrepreneurship, which led to studying the phenomenon of entrepreneurship through small and medium enterprises. Where these institutions play a very important pivotal role in achieving the economic and social development of societies, however, the increase in the intensity of competition in the field of business has put this type of institution in a weak position based on the limited resources (Ayoub, 2017). The success of these institutions depends on responding to the challenges of the business environment, which depends largely on the strategy of these institutions in the orientation and adoption of entrepreneurial behaviors and skills such as entrepreneurial self-efficacy.

Following the success of many economies as a result of focusing on the SMEs, the ideas of researchers in favor of entrepreneurship began to find wide acceptance on the basis that they are the first elements that create value and benefit at all levels, which prompted Algeria to move towards the establishment and promotion of this type of enterprise, based on the breaking the socialist approach at the end of the Eighties, and replacing it with another approach based on a free economy based on a new model of economic development, as it was proven to decision-makers that entrepreneurs and SMEs have become the necessary element for economic integration and diversification, as they constitute the main source of wealth, employment, innovation and promotion of exports outside hydrocarbons (Messikh, 2017). But the weak entrepreneurial potential of the Algerian individual emerging from socialist thought made the entrepreneurship path move at a very weak pace, which the government tried to solve by establishing various accompanying bodies for SMEs that aimed to revive the spirit of entrepreneurship and help small and medium enterprises to achieve success.

The structure and independence of small businesses make the entrepreneur the focus of its work, and the success or failure of small enterprises depends mainly on the capabilities and individual personality of the entrepreneur. In this regard, many studies that revolve around the mortality, sustainability, and growth of small enterprises indicate that the bankruptcy and failure of these enterprises are largely due to the lack of entrepreneurial spirit and personality including entrepreneurial self-efficacy of the owner and mismanagement.

As such, ESE has emerged as a significant psychological concept in entrepreneurship research, influencing entrepreneurial motivation, intention, behavior, and performance, as well as being a critical target outcome of entrepreneurship training and education. Moreover, due to the growing influence of entrepreneurial thinking and acting on career development and vocational behavior (Newman, Obschonka, Schwarz, Cohen, and Nielsen, 2019). Self-efficiency, being the belief of people to achieve the desired outcome has been reported as a strong predictor of entrepreneurial performance (Zubair and Khan, 2021).

The relationship between entrepreneurial self-efficacy and small business performance receives considerable scholarly attention in the literature, but few studies have been conducted among Algerian SMEs, and in the general context of entrepreneurial intention, without a link to SME's performance. Hence, this investigation’s purpose is to add to the research in the newer context of Algeria. Thus, this study was an attempt to bridge this gap in the literature. This study can be used to supplement existing theories on entrepreneurial self-efficacy and small-business performance. This research also has significant

implications for academics and practitioners to understand better entrepreneurial self-efficacy and small business performance.

Several studies at the institutional level and in the field of entrepreneurial behavior have shown a positive effect of the entrepreneurial self-efficacy component as one of the internal entrepreneurial capabilities on the performance and competitiveness of small and medium enterprises (Srimulyani, Hermanto, 2022; Zubair et al., 2021; Shen et al., 2021; and Klongthong et al., 2020), This is what the research seeks through the essential question of the impact that entrepreneurial self-efficacy can have on the performance of small enterprises in Algeria (Skikda).

2. ENTREPRENEURIAL SELF-EFFICACY AND PERFORMANCE OF SMALL BUSINESSES: LITERATURE REVIEW

2.1. Entrepreneurial self-efficacy (ESE)

There have been several studies that have stressed the relevance of entrepreneur self-efficacy in obtaining and fulfilling business goals. In his theory of social learning, Bandura (1977) was the first to introduce the idea of self-efficacy. It was defined as the strength of an individual's belief in themselves and their capacity to successfully fulfill roles that are relevant to entrepreneurship (Bandura, 1977). Boyd and Vozikis proposed in 1994 the idea that self-efficacy plays an important role in the development of intentions and business (Boyd, Vozikis, 1994). In the same year, Krueger and Brazeal proposed the idea that self--efficacy makes it possible to consider entrepreneurial potential (Krueger, Brazeal, 1994).

Self-efficacy is a specific cognitive variable in assessing initiative behavior (Levander, Raccuia, 2001). It is also an essential element for starting entrepreneurial activities (Baron, Markman, and Hirsa, 2001). Entrepreneurial self-efficacy is recommended as a crucial trait held by entrepreneurs in the sphere of entrepreneurship since it aids them in translating unpredictable business circumstances into opportunities. On the other hand, People without this characteristic saw the identical scenario as a barrier (Maitlo, Pacho, Bhutto, Xuhui, 2020).

Self-efficacy is defined by Social Cognitive Theory as an individual's assessment of their ability to carry out certain courses of action that necessitate achieving a specific result. It is the assessment of one's ability to turn projected outcomes into actions or the assessment of one's ability to plan and execute a certain course of action (Bandura, 1993). It relates to people's subjective perceptions that they have a distinctive capacity to execute a task, and it, therefore, reflects the individual's belief in his ability to achieve specific conduct (Messikh, 2021).

Entrepreneurial self-efficacy from the previous definitions can be defined as an entrepreneur's belief that he or she has the ability, motivation, and resources required to complete a task.

2.2. Performance of small businesses

The issue of small and medium enterprises has taken great interest by researchers, specialists, and governments alike, compared to the previous one, as attention was focused only on the major enterprise as the unique generator of wealth and work, but soon the view was reversed after the emergence of the increasing importance of the sector of small and medium enterprises, which it is often associated with the name of the entrepreneur. Small

and medium-sized businesses have long been recognized as a source of economic development and progress (Oladimeji, Sofoluwe, Odunaya, 2021).

Through directive law No. 01/18 of 12/12/2001 related to the promotion of small and medium enterprises, these enterprises (SMEs) were defined according to quantitative criteria (number of workers, sales volume, capital volume) as:

> Small enterprise It is every institution that employs between 10 and 49 people and its turnover does not exceed two hundred million Algerian dinars, or its total annual proceeds do not exceed one hundred million Algerian dinars. While the medium institution according to this law is every institution that employs from 50 to 250 people and its annual turnover is what between two hundred million and two billion DA, or the total annual proceeds are between 100 and 500 million DA (Algerian Official journal, 2001).

Many academics stress the need of measuring performance in small businesses to determine their success or failure. Income, employment, Competitive advantage, and profitability have been the most common ways to measure business performance in terms of growth, and many studies have noted that profitability is difficult to measure due to a variety of technical accounting concerns (Zubair, Khan, 2021).

The competitive advantage derived from internal organizational competencies and skills may be safer in terms of generating profits for firms (Akeke, Adetayo, Akeke, Oyebanji, 2021). Here, entrepreneurial self-efficacy is one of the most prominent of these competencies that should be strengthened by the Algerian entrepreneur to enhance the chances of success of his organization.

2.3. The aim of the study and research questions

The study aims to know the degree of effect that the self-entrepreneurial capacity dimensions (individual beliefs, Cognitive resources, and the actions) plays on the performance of small enterprises (business performance in terms of growth: income, number of employees, competitive advantage) in Skikda, Algeria.

Through the previous (main objective) and to know the effect of entrepreneurial self-efficacy on the performance of small enterprises in Skikda, the following main question can be asked: To what extent does entrepreneurial self-efficacy affect the small business performance in SKIKDA?

The following specific questions have also been addressed based on the main question to explore the impact of (ESE) dimensions on small business performance:

- To what extent do the individual beliefs affect the performance of small businesses in Skikda?
- To what extent do the Cognitive resources affect the performance of small businesses in Skikda?
- To what extent do the actions (needed to perform specific tasks) affect the performance of small businesses in Skikda?
- Are there statistically significant differences in the answers of the sample members regarding the impact of Entrepreneurial Self-Efficacy on the performance of a small business, attributed to demographic variables?

3. RESEARCH METHODOLOGY

In order to answer the main problematic and achieve the goal of the study, a random sample of small enterprises in the city of Skikda was studied during the last three months of 2021.

3.1. Population and sample of study

The population of this study represents all small enterprises in Skikda with an amount equal to 320 small enterprises, according to the statistics of the statistics department of the Directorate of Small and Medium Enterprises of Skikda for the year 2020.

The requests were randomly selected to ensure that each unit in the community was an equal opportunity to be selected as a sample for this study.

A sample size of 174 SEs was derived using the Krejcie and Morgan (1970) table, and a questionnaire was distributed to them. 136 analyzable forms were retrieved, which means a response rate of 78.16%. Descriptive statistics, Pearson Product Moment Correlation Coefficient, and regression analysis were used for statistical analysis with the aid of SPSS version 23.

3.2. Reliability and internal consistency of the study instrument

Reliability analysis was done using the alpha Cronbach method to test the stability of the measuring instrument as follows.

Table 1. Reliability statistics (alpha Cronbach coefficient)

Axes	Number of terms	Alpha Cronbach coefficient
individual beliefs	04	0.870
actions (needed to perform specific tasks)	04	0.896
cognitive resources	04	0.878
performance of small business	09	0.778
all axes	21	0.888

Source: Own calculations based on spss output.

It is clear from the above table that the value of the alpha Cronbach coefficient for the various axes exceeded 0.6 (60%), which ranges between 0.778 and 0.896, which is a high and acceptable value, while the total value of the Alpha Cronbach coefficient is 0.888, which is also a high and acceptable value. This indicates that the questionnaire has a high degree of stability, and this reassures the researcher of its application to all members of the study sample.

The method of the Pearson correlation coefficient was used in to verify the validity (internal consistency) of the construction between the averages of the axes and the total mean of the tool, as shown in the following table.

It is clear from the above table that the value of Pearson's correlation coefficients is acceptable for the axes and the tool as a whole and the correlation coefficients are significant at the 1% level of significance, where the significance reached $p \leq 0.01$ (**).

Table 2. Internal consistency (Pearson correlation coefficient)

Axes	Correlation coefficient	Significance level
individual beliefs	0.613**	0.000
actions (needed to perform specific tasks)	0.505**	0.000
cognitive resources	0.708**	0.000
performance of small business	0.719**	0.000

Source: Own calculations based on spss output.

3.3. Normal distribution test

The Kolmogorov-Smirnov test was used to find out whether the study model was subject to a normal or abnormal distribution, to determine the nature of the tests used in the hypothesis test. The results were as follows.

Table 3. Normality (Kolmogorov-Smirnov) test

Kolmogorov-Smirnov		
Axes	**Value Z**	**Sig***
all the axes of study	0.193	0,000

Source: Own calculations based on spss output.

It is clear from the above table that the value of the significance level for each section of the test results (axes) is less than 0.05 (*). This note indicates that the data do not follow a normal distribution. This is what requires relying on nonparametric tests to answer the established hypotheses.

4. RESULTS AND DISCUSSION

To test the hypothesis of the study, the simple regression analysis was used, the outcome of the analysis are presented in the following tables:

Hypothesis 1

H1: There is a statistically significant effect at the 0.05 level of significance for the individual beliefs on the performance of small businesses in Skikda.

Table 4. The result of a simple regression analysis to test the effect of individual beliefs on the performance of small businesses

Axis	B value	T value	F value	R	R^2	Sig
individual beliefs	0.307	4.625	21.386	0.371	0.138	0.000

Source: Own calculations based on spss output.

Table 4 shows the effect of the individual beliefs on the performance of small businesses in Skikda. The correlation coefficient reached (0.371) at the level of significance of 0.000 which is less than 0.05, and the determination coefficient (0.138) means that (13.8%) of changes in the level of small businesses performance in Skikda resulting from the change in the level of individual beliefs, The value of the impact degree was (0.307), this reflects

that the increase in the individual beliefs leads to an increase in the level of small enterprises performance, which shows the significance of this relationship is the value of F (21.386) and the value of T (4.625), This confirms the validity of the first sub-hypothesis (H1), which says: There is a statistically significant effect at the 0.05 level of significance for the individual beliefs on the performance of small businesses in Skikda.

Hypothesis 2

H2: There is a statistically significant effect at the 0.05 level of significance of the Cognitive resources on the performance of small businesses in Skikda.

Table 5. The result of the simple regression analysis to test the effect of Cognitive resources on the performance of small businesses

Axis	B value	T value	F value	R	R2	Sig
Cognitive resources	0.330	5.042	25.420	0.399	0.159	0.000

Source: Own calculations based on spss output.

Table 5 shows the impact of the Cognitive resources on the performance of small businesses in Skikda. The correlation coefficient reached (0.399) at the level of significance of 0.000 which is less than 0.05 and the determination coefficient (0.159), means that (15.9%) of changes in the level of small business performance resulting from the change in the level of cognitive resources. The value of the effect degree was (0.330), and this reflects that the increase in cognitive resources leads to an increase in the level of small business performance, and what shows the significance of this relationship is the value of F (25.420) and the value of T (5.042), This confirms the validity of the second sub-hypothesis (H2), which says: There is a statistically significant effect at the 0.05 level of significance of the Cognitive resources on the performance of small businesses in Skikda.

Hypothesis 3

H3: There is a statistically significant effect at the 0.05 level of significance of the actions on the performance of small businesses in Skikda.

Table 6. The result of a simple regression analysis to test the effect of the actions (needed to perform specific tasks) on the performance of small businesses

Axis	B value	T value	F value	R	R2	Sig
actions	0.424	6.521	42.530	0.491	0.241	0.000

Source: Own calculations based on spss output.

Table 6 shows the effect of the actions (needed to perform specific tasks) on the performance of small businesses. The correlation coefficient reached (0.491) at a significance level of 0.000 which is less than 0.05, and the determination coefficient (0.241), means that (24.1%) of changes in the level of small business performance resulting from the change in the level of actions. The value of the degree of effect was (0.424), this reflects that the increase in the actions needed to perform specific tasks leads to an increase in the level of small enterprises performance, which shows the significance of this relationship is the value of F (42.530) and the value of T (6.521), This confirms the validity of the third sub-hypothesis (H3), which says: There is a statistically significant effect at the 0.05 level of significance of the actions on the performance of small businesses in Skikda.

Hypothesis 4

H4: There are statistically significant differences at the level of 0.05 in the answers of the sample members regarding the effect of Entrepreneurial Self-Efficacy on the performance of small businesses due to demographic variables.

In order to test this hypothesis, the Mann-Whitney and Kruskal-Wallis tests were used (because the data did not follow a normal distribution).

We used the Mann-Whitney test for the variable of gender. Concerning the variables of age, Educational level, and field of study, we used the Kruskal-Wallis test. Here, the hypothesis is accepted if the significance level is less than or equal to 0.05.

Table 7. Mann-Whitney test for the significance of the differences in the answers of the sample members regarding the effect of Entrepreneurial Self-Efficacy on the performance of small business due to gender

Variable		N	Average rank	Mann-Whitney U	Significance level
gender	male	111	68.37	1373.000	0.000
	female	25	69.08		

Source: Own calculations based on spss output.

It is clear from Table 7 that the level of significance for the mean of the respondents' ranks for the variable of gender was estimated at 0.000, thus it is statistically significant at the level of significance of 0.05, which means that there are statistically significant

Table 8. Kruskal Wallis test for the significance of the differences in the answers of the sample members regarding the effect of Entrepreneurial Self-Efficacy on the performance of small business due to age, Educational level, and field of study

Variable	Categories	X^2	df	Sig.
Age	less than 26	5.849	5	0.321
	26-30			
	31-35			
	36-40			
	41-45			
	over 45			
Educational level	Elementary or less	6.440	4	0.169
	preparatory			
	secondary			
	professional			
	university			
Field of study	Economic and management sciences	2.171	4	0.704
	natural sciences			
	technology			
	legal sciences			
	human and social sciences			

Source: Own calculations based on spss output.

differences (at the level of $\alpha \leq 0.05$) in the effect of Entrepreneurial Self-Efficacy on the performance of small businesses due to gender. Therefore, this hypothesis is accepted concerning the variable of gender.

It is clear from Table 8 that there are no statistically significant differences (at the level of $\alpha \leq 0.05$) in the answers of the sample members regarding the effect of Entrepreneurial Self-Efficacy on the performance of the small business in Skikda due to the variables of age, as well as educational level, and the field of study. Therefore, this hypothesis is rejected about to the variables of age, Educational level, and the field of study.

Hypothesis 5 (*Main hypothesis*)

H5: There is a statistically significant effect at the 0.05 level of significance for the Entrepreneurial Self-Efficacy on the performance of the small business in Skikda.

Table 9. The result of a multiple regression analysis to test the effect of the Entrepreneurial Self-Efficacy on the performance of small business in Skikda

Axis	R	R2	F value	sig
Main Hypothesis	0.526	0.277	16.828	0.000

Source: Own calculations based on the output of the program SPSS.

The table above shows that there is an effect of the Entrepreneurial Self-Efficacy on the performance of the small business in Skikda (this result synchronizes with the results of Srimulyani, Hermanto, 2022; Zubair et al., 2021; Shen et al., 2021), as the correlation coefficient reached (0.526) at a level of significance of 0,000 less than 0.05, while the determination coefficient reached (0.277), means its value (27.7%) of changes in the performance of the small business in Skikda resulting from the change in the level of the Entrepreneurial Self-Efficacy. The significance of this effect confirms the value of F (16.828), which is a function at a level less than 0.05, and this confirms the validity of the main hypothesis, which says: there is a statistically significant impact at the 0.05 level of significance for the Entrepreneurial Self-Efficacy on the performance of the small business in Skikda.

Through the collected values, the regression equation can be written in terms of the elements of entrepreneurial self-efficacy and improving performance levels in small enterprises in Skikda as follows:

$$\mathbf{Y = 1.757 + 0.077\ X1 + 0.315\ X2 + 0.131\ X3}$$

Where the variables of the equation are defined as follows:

- Y: performance of small business in Skikda;
- X1: individual beliefs;
- X2: actions (needed to perform specific tasks);
- X3: Cognitive resources.

5. CONCLUSION

The study examined the effect that entrepreneurial self-efficacy can add to the performance of small enterprises in the state of Skikda, Algeria, by studying the sub-effect

of dimensions (agreed in previous studies) of entrepreneurial self-efficacy on the overall performance of the studied sample.

It can be seen in the first hypothesis that there is a statistically significant effect for the individual beliefs on the performance of small businesses in Skikda, whereas (13.8%) of changes in the level of small businesses performance in Skikda resulting from the change in the level of individual beliefs.

In the second hypothesis, it can be seen that there is a statistically significant effect of the Cognitive resources on the performance of small businesses in Skikda, whereas (15.9%) of changes in the level of small business performance resulting from the change in the level of cognitive resources.

The third hypothesis informs the readers also that there is a statistically significant effect of the actions on the performance of small businesses in Skikda, whereas (24.1%) of changes in the level of small business performance result from the change in the level of actions.

As a conclusion, it can be seen that there is a statistically significant effect at the 0.05 level of significance for the Entrepreneurial Self-Efficacy on the performance of the small business in skikda (this result synchronizes with the results of Srimulyani, Hermanto, 2022; Zubair et al., 2021; Shen et al., 2021; Klongthong et al. 2020), whereas (27.7%) of changes in the performance of the small business in Skikda resulting from the change in the level of the Entrepreneurial Self-Efficacy, Which calls for the need to work to enhance this efficiency for the owners of these businesses, especially in light of competition and the increase in the number of this type of business in Algeria.

In this regard, the study recommends the necessity of increasing the ESE of individuals; as it is one of the most important factors affecting the entrepreneurial orientation on the one hand, and its effectiveness in raising the performance of small enterprises. Therefore, the Algerian government must focus the entrepreneurial support policies and strategies on raising this capacity through entrepreneurial awareness programs, as well as through entrepreneurial training, in addition to actual financial support for projects in a way that inspires confidence among individuals to embark on the entrepreneurial adventure.

Our research fills this gap, particularly in the Algerian context, by claiming that entrepreneurial self-efficacy (ESE) affects the performance of the small business in Algeria. Furthermore, our research contributes to the advancement of knowledge in various streams of literature on the phenomena studied, including entrepreneurial self-efficacy and business performance, and suggests that small businesses can perform well through a strong entrepreneurial self-efficacy strategy. It also enhances ESE exposure and awareness, which helps to dispel any misunderstandings.

Despite the author's efforts, this paper has some limitations. The sample size is the first constraint. To have a deeper grasp of the studied topic, future studies should employ a larger sample size. Second, the applicability and generality of our research findings to different types of business are unknown. A future study might give more exact explanations on the link between entrepreneurial self-efficacy and small business performance by using a model that includes certain moderators and mediator factors. Third, the study only looked at entrepreneurial self-efficacy as an independent variable; future studies could look into other aspects of entrepreneurial characteristics like (EO) dimensions, and overall performance of small and medium enterprises.

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