The impact of ICT adoption decision-making: Case of Zimbabwean SME owner-managers

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Abstract : **This study analyzed the impact of ICT adoption by SMEs owner-manager on decision-making. The paper also explored the relationship that exists between owner-managers' academic qualifications and decision-making. A quantitative approach was adopted to enable the researchers' to explore relationships between variables and test hypotheses. Questionnaires with 19 scales adopted from past studies were used to collect data from 400 participants that had been selected using random sampling. Descriptive and inferential statistical analysis were performed in STATA 11. Findings from the study shows that ICT adoption greatly improves decision-making. Hypothesis test has proved that a significantly positive relationship exists between ICT adoption and decision-making. There is a negative relationship between owner-managers' education and decision-making. Practical implications shows that poor decision-making is the reason behind the failure of most SMEs. ICT adoption improves decision-making by providing owner-managers with a platform to gather all necessary information before making strategic decisions. Firms with owner-managers that harness ICT are likely to be successful as a technological culture strengthens competitive advantage.**

Keywords: **Decision-making, Information and communications technology, Small to medium enterprises.**
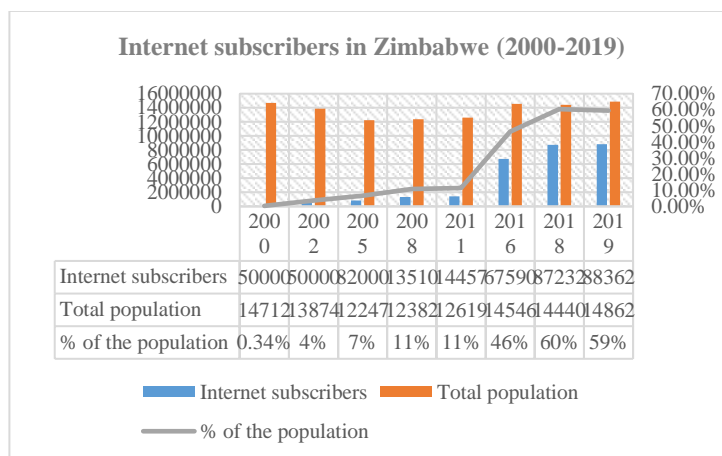
I. INTRODUCTION

Most countries in Europe have directed their focus to SMEs so that they have become the epicenter of the industrial revolution (Sommer, 2015). Africa in general and Zimbabwe in particular has in the past years promoted the growth of SMEs. This has been done through the indigenous policy and the implementation of other policies such as the Zimbabwe Government Strategic Policy on SMEs. The later was introduced in 2004. Ajayi and Morton (2015) point out that in most countries, the growth of SMEs has led to national revenue generation and export foreign currency earnings. Arbelo, Pérez-Gómez, and Arbelo-Pérez, (2018) point out that the Spanish economy just like in other states, SMEs generates 66% of jobs and they currently dominate the business environment. Zimbabwean SMEs are employing nearly 80% of the working population, 42% GDP contribution, and are contributing 20% to the consolidated revenue fund (Machivenyika, 2018).

The worldwide total number of internet users stood at 4 833 521 806 as of June 2020. This shows that almost 62% of the global population is utilizing the internet ("World Internet Users Statistics and 2020 World Population Stats", 2020). Africa had the least internet penetration ("Africa Internet User Stats and 2020 Population by Country", 2020) Computer literacy in Africa is low because of poor internet connection systems and rampant power cuts (Digital Literacy Fast Sheet, 2015). Furthermore, the digital literacy report cited poor rules and regulations governing e-commerce as a major factor affecting Africa.

In the year 2000, Zimbabwe had only 50 000 internet subscribers versus a total population of 14 712 000 ("Zimbabwe Internet Stats and Telecommunications Reports", 2020) Number of internet subscribers rose by 450 000 in 2002 equating to only 4% of the total population. In 2005 93% of the total population was not yet using the internet. 2008 saw the number of internet subscribers standing at 1 351 000 representing 11% of the total population. From 2011 to 2016, there was a steep rise in internet subscribers from 11% to 46%. Econet wireless the largest mobile operator had launched mobile broadband in late 2010 and 2011 saw the removal of import duty on computers. By 2018 only 40% of the total population was not connected to the internet. The percentage of those not using the internet increased by 1% to 41% in 2019. Fig 1 below shows the trend in internet subscribers since the 20th century.

Fig 1: Internet subscribers in Zimbabwe (2000-19)

	2000	2002	2005	2008	2011	2016	2018	2019
Internet subscribers	50000	500000	820000	1351000	4457675	9087232	8362	
Total population	14712	13874	12247	12382	12619	14546	14440	14862
% of the population	0.34%	4%	7%	11%	11%	46%	60%	59%

- Internet subscribers ■ Total population
- % of the population

Source: Researcher's compilation using Zimbabwe Internet Stats and Telecommunications reports (2020).

In Zimbabwe, there seems to be a mismatch between economic development and ICT adoption as the economy continues to melt. Despite calls by the government of Zimbabwe on ICT adoption, Makiwa and Steyn (2016) highlight that most SMEs own the equipment but are not using or misusing for several reasons.

Table 1: Internet usage in Zimbabwe (terabytes)

Year	Data usage	% change	Year	Data usage	% change
2016	8 100	-	2018	27 278	77.1%
2017	15 400	90.1%	2019	35 733	31%

Source: Researchers' compilation using data provided by ("Reports - Postal and Telecommunications Regulatory Authority of Zimbabwe", 2020).

The number of internet subscribers is not a reliable measure of ICT adoption due to the existence of passive subscribers. Annual internet data usage can be a reliable measure. Table 1 above shows internet data used by Zimbabwe from 2016 to 2019 as published in public reports prepared by Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ). 8 100 terabytes of data were used in 2016. Internet data usage almost doubled in 2017 as 15 400 terabytes of data were used. Usage increased by 77.1% in 2018. A slight increase in data usage was recorded from 2018 to 2019. Generally, ICT adoption as measured by increase internet usage is on the rise.

1.1 Statement of the problem

Globally, most countries have harnessed ICT and it has proved to be useful in alleviating economic problems faced by SMEs (Makiwa and Steyn, 2016). The volatile economic conditions inhibit the growth of SMEs. The government of Zimbabwe launched the ICT policy after recognizing it as an economic pillar that transforms challenges and also encouraged all sectors including SMEs to harness technology (Machivenyika, 2018). Despite the increase in internet usage and the growth in the number of internet subscribers in Zimbabwe, the growth of SMEs remain stagnant as the country is experiencing hyperinflation, rising unemployment, and low economic growth. Besides economic factors, SMEs are failing to survive the turbulent environment because owner-managers are making poor decisions due to a lack of managerial qualifications and failure to utilize information technology (Gombarume, 2014). Failure to adopt ICT leads to information asymmetry, a recipe for poor decision-making (Makiwa and Steyn, 2016). This study seeks to analyze the impact of ICT adoption on decision-making style.

1.2 Research objectives

✓ To establish the impact of SME owner-manager's academic qualifications on decision-making.
✓ To analyze the impact of ICT adoption and decision-making.

1.3 Research hypotheses

✓ H0- Academic qualifications has no impact on decision-making.
✓ H1- Academic qualifications has an impact on decision-making.
✓ H0- ICT adoption has no impact on decision-making.
✓ H1- ICT adoption has an impact on decision-making.

II. LITERATURE REVIEW

2.1 Theoretical framework: RBV

Barney (1991) as cited by Özçelik, Aybas, and Uyargil (2016) states that the resource-based view (RBV) is centered on the assumption that internally held resources are the prime predictor of a firm's competitive advantage. Ceteris paribus, a firm creates a competitive advantage if the internally held resources are VRIN that is valuable, rare, inimitable, and not easily substitutable (Almarri and Gardiner, 2014). Contextually, the ICT infrastructure is an internally held resource that a company can use to create a competitive advantage. ICT equipment is not standardized hence vary from brands, specifications, and compatibility. The assumption is that ICT as a resource can help SME owner-manager in making decisions. Tob-ogu, Kumar, and Cullen (2018) in their Nigerian study on the adoption of ICT in the petroleum sector also used the RBV as the theoretical framework and identified ICT as a valuable asset.

2.2 SMEs defined

Dar, Ahmed, and Raziq (2017) used secondary data collected from peer-reviewed journals in an attempt to examine various definitions of SMEs. They found that there is no standard definition as they vary from country to country or vary from sector to sector. The study concludes that the common thresholds used by different countries or sectors were the number of employees, net assets, and sales revenue. Results from the study show that the maximum number of employees was 500 (France and Ireland). Contrary to Dar, Ahmed, and Raziq (2017), Nyamwanza (2014) argues that the number of employees is the most reliable criterion in managerial studies as net assets and sales revenue are biased measures in a volatile and dynamic business environment due to economic factors like inflation. In line with Nyamwanza (2014), this study uses the number of employees to define SMEs as de-dollarization in Zimbabwe led to economic instability with inflation standing at 737.3% as of 30 June 2020 (Kazunga, 2020).In Zimbabwe, SMEs are registered entities that have less than 100 employees and this criterion applies to all sectors (Ndlovu, Shumba and Vakira, 2018).

2.3 SME owner-manager's education

Organizational learning theories have proved that education influences the decision-making process as it plays a pivotal role in behavioral change (Msoba, 2013). Arguing from a human capital theory, Ndlovu, Shumba, and Vakira (2018) emphasize that to remain competitive, SME owner-managers

should continuously advance their academic qualifications so that they may make ethical decisions. Contrary to the later, Isaga (2015) in a quantitative study conducted on 300 SME owner-managers found that education has no impact as multiple regression results pointed out that the hypothesis on education was statistically insignificant. Machogu and Amayi (2016) in their Tanzanian cross-sectional study on SMEs found education influencing rational decision-making. Their study used a smaller sample size and was limited to tax education. Besides the limited scope, there is a need to use a larger sample to ensure the generalizability of findings. Emmanuel (2017) grounding his study on the RBV theorem postulates that entrepreneurial education helps owner-managers to successfully run their businesses. Using a sample size of 400 owner-managers of SMEs in the manufacturing sector, Emmanuel (2017) found education predicting firm performance by 13% with a p-value of 0.03. Studies on education and rational decision-making are few hence the need to conduct this study.

2.4 Decision-making support systems: ICT

Gono, Harindranath, and Özcan (2016) in their study found South African owner-managers greatly influencing ICT purchasing decisions and the main reason for ICT adoption was a relative advantage. Van Wart et al, (2017) states that ICT adoption improves decision-making but failed to highlight the degree of influence. Qualitative studies lack rigor. A quantitative study would best explore the relationship between the variables.

III. METHODOLOGY

The quantitative study adopted an explanatory research design to be able to assess the association between ICT adoption, academic qualifications and decision-making. The target population was made up of SME owner-managers in Zimbabwe that were registered on an association's database. The sample size was 400 borrowed from Emmanuel (2017). 303 questionnaires were successfully returned. The adopted questionnaire was recoded using the five point Likert scale as participants find them less confusing.

IV. DATA ANALYSIS

Data analysis was performed in STATA 11 using multiple regression and was based on the following model specification:

$$y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + e_i$$

Where:

β = unknown parameters, e_i = error items, y_i= decision-making, x_1= gender, x_2= age, x_3= education, x_4 = position, x_5= experience and x_6= ICT adoption.

V. FINDINGS

Table 2: Multiple regression results (summary)

Linear regression	N (obs)	F(6,296)	Prob > F	R-squared	Root MSE
	303	254.74	0.0000	0.9104	1.8084

Source: STATA 11

Table 3: Regression coefficients

Rational decision	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf	.Interval]
Gender	-.1399304	.226333	-0.62	0.537	-.5853563	.3054954
Age	-.026443	.1128948	-0.23	0.815	-.2486212	.1957352
Education	-.2794658	.155167	-1.80	0.073	-.5848362	.0259046
Position	.8365374	.7024726	1.19	0.235	-.5459361	2.219011
Experience	-.147142	.1601625	-0.92	0.359	-.4623435	.1680594
ICT	.8799455	.0246119	35.75	0.000	.8315091	.9283819
_cons	4.470165	1.643988	2.72	0.007	1.234779	7.70555

Source: STATA 11

From table 2 above, R-squared of 0.9104 shows that gender, age, education, position, experience, and ICT adoption predicts rational decision-making style by 91%. Goodness of fit (GOF) as determined by R-square is also 91%. From table 3 above, the negative coefficients shows that gender, age, education and experience plays an inhibitory role on decision-making. Variables with negative coefficients correspondingly have negative t-values. Gender, age, education, position and experience are statistically insignificant as they have p-values greater than 0.05. Smaller (negative) t-values also explains the larger p-values.

Education had a negative coefficient of 0.28 meaning to say that the more educated owner-managers got, the lesser they made sound decisions (analysis paralysis). This means that diploma holders are more likely to make better the rational decisions than the Ph.D. holders. Findings are similar to those by Isaga (2015) who also found that formal education does not improve decision-making. The model fails to reject the null hypothesis.

The positive coefficients shows that ICT positively influences or improves decision-making and this is statistically significant (p<0.05). Coefficient of 0.88 meaning that 1%

increase in ICT adoption proportionally improves decision-making by 88%. ICT also has positive (large) t-values and this explains the smaller p-values. The empirical finding supports Gono, Harindranath, and Özcan (2016) who had theoretically stated that ICT adoption positively influences decision-making. The multiple regression model rejects the null hypothesis.

VI.RECOMMENDATIONS

This model can help SMEs to harness ICT for their growth and development. The internet as a source of information helps owner-manager to deduce tried and tested ideas that can help them in making relevant decisions. Findings may be limited to SMEs. Further studies can consider other sectors.

REFERENCES

[1] Africa Internet User Stats and 2020 Population by Country. Internetworldstats.com. 2020. Retrieved 18 August 2020, from https://www.internetworldstats.com/africa.htm.

[2] Ajayi, O.M. and Morton, S.C., 2015. Exploring the enablers of organizational and marketing innovations in SMEs: Findings from south-western Nigeria. Sage Open, 5(1), p.2158244015571487.

[3] Almarri, K. and Gardiner, P., 2014. Application of resource-based view to project management research: supporters and opponents. Procedia-Social and Behavioral Sciences, 119, pp.437-445.

[4] Arbelo, A., Pérez-Gómez, P. and Arbelo-Pérez, M., 2018. Estimating efficiency and its determinants in the hotel sector using a profit function. Current Issues in Tourism, 21(8), pp.863-876.

[5] Barney, J.B., 1991. The resource based view of strategy: Origins, implications, and prospects. Journal of management, 17(1), pp.97-211.

[6] Dar, M.S., Ahmed, S. and Raziq, A., 2017. Small and medium-size enterprises in Pakistan: Definition and critical issues. Pakistan Business Review, 19(1), pp.46-70.

[7] Digital Literacy Fast Sheet. 2018. Has cashless finally arrived in Malaysia? Not really. [online] Available at: https://www.digitalnewsasia.com/digital-economy/has-cashless-finally-arrived-malaysia-not-really [Accessed 31 Jan. 2021]

[8] Emmanuel, Y., 2017. Influence of entrepreneurship education, technology and globalisation on performance of SMEs in Nigeria. African journal of business management, 11(15), pp.367-374.

[9] Gombarume, F.B., 2014. Challenges faced by small to medium scale enterprises: A case study of Chitungwiza, Zimbabwe.

[10] Gono, S., Harindranath, G. and Özcan, G.B., 2016. The adoption and impact of ICT in South African SMEs. Strategic Change, 25(6), pp.717-734.

[11] Isaga, N., 2015. Owner-Managers' Demographic Characteristics and the Growth of Tanzanian Small and Medium Enterprises. International Journal of Business and Management, 10(5), p.168.

[12] Kazunga, O. 2020. Year-on-year inflation spikes to 785,5pc: Zimstat. The Chronicle. Retrieved 2 July 2020, from https://www.chronicle.co.zw/year-on-year-inflation-spikes-to-7855pc-zimstat/.

[13] Machivenyika, F. 2018. ZIM heads for ICT revolution. President launches Information Communication Technology policy. The Chronicle. Retrieved 18 February 2020, from https://www.chronicle.co.zw/updated-zim-heads-for-ict-revolution-president-launches-information-communication-technology-policy/.

[14] Machogu, C. and Amayi, J.B., 2016. The effect of taxpayer education on voluntary tax compliance, among SMEs in Mwanza City-Tanzania.

[15] Makiwa, P.J. and Steyn, R., 2016, May. ICT adoption and use in Zimbabwean SMEs. In 2016 IST-Africa Week Conference (pp. 1-8). IEEE.

[16] Msoba, R.W., 2013. TAXPAYERS'EDUCATION ON TAX COMPLIANCE IN DAR ES SALAAM TANZANIA (Doctoral dissertation, Mzumbe University).

[17] Ndlovu, N., Shumba, V. and Vakira, E., 2018. The Influence of Experience and Owner-Managers Education on SME Performance: Case of Motor Spares Enterprises at Kelvin Light Industries in Bulawayo. Journal of Economics and Behavioral Studies, 10(4 (J)), pp.22-31.

[18] Nyamwanza, T., 2014. Strategy Implementation for survival and growth among small to medium-sized enterprises (SMEs) in Zimbabwe (Doctoral dissertation, Midlands State University).

[19] Özçelik, G., Aybas, M. and Uyargil, C., 2016. High performance work systems and organizational values: Resource-based view considerations. Procedia-Social and Behavioral Sciences, 235, pp.332-341.

[20] Sommer, L., 2015. Industrial revolution-industry 4.0: Are German manufacturing SMEs the first victims of this revolution?. Journal of Industrial Engineering and Management, 8(5), pp.1512-1532.

[21] Tob-Ogu, A., Kumar, N. and Cullen, J., 2018. ICT adoption in road freight transport in Nigeria–A case study of the petroleum downstream sector. Technological Forecasting and Social Change, 131, pp.240-252.

[22] World Internet Users Statistics and 2020 World Population Stats. Internetworldstats.com. 2020. Retrieved 18 August 2020, from https://www.internetworldstats.com/stats.htm.

[23] Zimbabwe Internet Stats and Telecommunications Reports. Internetworldstats.com. 2020. Retrieved 18 August 2020, from https://www.internetworldstats.com/af/zw.htm.