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Investigation of the Influence of Organisational Internal Factors on e-Business Diffusion in the Small-to-Medium Enterprise (SME) Sector in Zimbabwe

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Abstract – This research investigates the influence of ten selected organisational factors on e-business diffusion. A survey design was engaged, using a questionnaire based on a five-point Likert scale. Data was collected electronically through survey monkey platform to reach firms recorded in the Zimbabwe Revenue Authority's (ZIMRA) Small and Medium Enterprises register which was taken as the sampling frame. A quantitative research design was adopted, using probability random sampling method. Seven hundred (700) questionnaires were e-mailed to owners and managers of the firms and 590 of the 603 returned were usable. The data analysis was based on the demographic information which depicted organisational factors. ANOVA tests were carried out to determine the factors that were significant in influencing the respective firms' ability to adopt e-business. These were further tested through structural equation modelling (SEM) (AMOS SPSS v26) and goodness of fit tests to reaffirm their significance. Overall, the study concluded that SME characteristics have a significant influence on e-business diffusion in the SME sector in Zimbabwe. The researcher recommended that Government should develop a fully equipped modern national ICT infrastructural network to anchor the internal systems of the SMEs. They should also provide adequate financial support to enable the SMEs develop the requisite internal ICT systems and training of personnel. The SMEs, on their part, should modernise their operational systems to be in line with the current wave of virtual business models necessitated by the ravaging COVID-19 pandemic.

Keywords – Organisational Factors, Smes, E-Business, Zimbabwe, ZIMRA.

I. Introduction And Background To The Study

In today's global market place, electronic business (e-business) has assumed a critical role in sustaining organisations' business operations, more so in the wake of a 'new trading normal' heralded by the COVID-19 pandemic. This phenomenon has limited the use of traditional face-to-face brick-and-mortar business transactions, thus entrenching e-business as the most viable business model of the 21st century. E-business has revolutionised the way business communities conduct their activities, offering a borderless global virtual market space [1], [2], [3], [4]. It has opened up markets which were otherwise restricted by physical geographical borders. This business model, whose use has accelerated in the recent decades, has become the vital cog in business sustainability across regions and international boundaries, thereby connecting distant trading partners.

Zimbabwe, which has been reeling under decades of economic decline, has been lagging behind in the use of ICT in line with the general trend in the world markets [5], [6], [7], [8]. This laggard position in adopting the trending e-business models has compromised the potential of the SME sector to be a significant contributor to the country's sustainable economic development. Several factors have been shown to impede or advance the ability of SMEs to adopt new innovative ways of doing business such as internet-based operational applications for the advancement and sustainability of their business entities. The SME sector has

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been consistently highlighted as the engine of economic growth and development in world economies by several researchers and economists [9], [10], [11], [12], [13]. As such, this study focuses on the internal factors that impact on SMEs' ability to adopt the trending e-business model. The investigation was anchored on Tornatzky and Fleischer's [14] technology, organisation and environment (TOE) framework from which the researcher extracted one variable – organisation – to analyse the significance of the SMEs' internal attributes and ascertain their significance on e-business diffusion in the sector.

II. Focus Of The Study

Electronic business has assumed greater importance in global trade. This has made it critical for organisations – small, medium and large – to invest in strategies that enable them to attain a competitive status in world markets. Technological developments, the world over, render e-business a necessity rather than a choice because of the ever-changing methods of conducting business which are becoming more and more web-based. The advent of COVID-19 increased the urgency of adopting far-reaching business models like e-business for survival and sustainability. Zimbabwe has been listed as one of the developing countries that are lagging behind the adoption of electronic business and faces the danger of further economic decline. With the SME sector regarded as a major player in economic development and contribution to the country's gross domestic product (GDP), it is critical that the players gear up for better performance through the engagement of competitive tools like e-business. It would be suicidal for the SME sector to ignore the pole position assumed by e-business in their survival, growth and sustainability in the 21st century. For this reason, the researcher considered it important to examine the internal context of the small and medium organisations to ascertain how the various factors that constitute that context contribute to the SMEs' ability or failure in adopting e-business as their operational business model, in line with the rest of the world market players.

III. Literature Review, Hypotheses And Conceptual Framework.

The success of the SME sector can be safely attributed to the internal capabilities of the respective firms, based largely on their financial and human capital resources. These are the key enablers in any strategic decisions the organisation makes to attain growth and sustainability. Various studies have shown that the internal context of the organisation plays a pivotal role in the diffusion of innovative ideas and applications [15], [16], [3], [17]. This corroborates Tornatzky and Fleischer's [14] TOE framework which highlights that the firms' characteristics are important in taking up new innovations. In this study, ten attributes were investigated to ascertain their impact in contributing to the ability of the SMEs' adoption of e-business as a strategic level operational model. These were labelled **SME1-SME 10**. The selected attributes were: age of management and owners, position in the organisation, level of education, ICT training, years of experience, management attitude to ICT, number of employees, years of operation, gross value of assets and annual turnover. No one study among the reviewed literary works has looked at all these ten factors together in one research and in the same detail as in this study. Some of the factors discussed in the current study relate to the management or owners of the respective SMEs while others are linked specifically to the operations of the firms. However, several studies observe that the aspect of management and the firm are intertwined in their impact on e-business diffusion. In most small firms, business operations are under a single owner/manager. In such situations, the separation of firm and managerial factors becomes blurred due to the high locus of control invested in the owner/manager as the key decision maker [18], [15], [19], [7], [20], [21], [22], [3]. To ascertain the significance of the organisation's internal context in the process of e-business diffusion, the main hypothesis which anchors this study was formulated.

H0: The organisation's internal factors influence the diffusion of e-business in small-to-medium enterprises in Zimbabwe.

This hypothesis is operationalised by ten sub-hypotheses which are derived from each of the organisational factors investigated in the study.

The discussion deriving from this hypothesis is demarcated into two parts, namely, **management attributes** and **organisational characteristics,** to clearly ascertain their respective influences on the adoption of e-business

3.1 Management Attributes

Management attributes relate to the characteristics of the owner-managers which impinge on their attitude towards the adoption of new innovations in their respective organisations.

3.1.1 Age (SME1)

This study focuses mainly on the age of the owner or senior management as key personnel who shape the strategic thrust of the firm. Although 'age' is not a widely discussed dimension in extant literature, the few researchers who have analysed it have posited that it influences the firms' propensity towards the adoption of new innovations in their market spaces [23], [18], [24], [25]. Awa, Ukoha and Emecheta [18] observed that early adopters of new ideas or innovations are commonly young males who are more open to social influences. This is escalated by the fact that they are at the social development and learning stages of their life cycle. They are more excited by new technological developments and have the urge to try them out. Their involvement in the more dynamic social networks of their peers who are likely to be users of the new technology propels their desire to adopt any novel technological applications introduced in their respective areas of interest. This is corroborated by Camilleri's [26], [27] contrasting observation of older people's reactions to technological innovations. He posits that they find it more difficult to delve into new ideas or technological innovations and hence they become more averse to their diffusion. They consider technology to be a disruptive intervention that overturns the status quo and thus triggers the fear of risky changes in their business operations. It requires the re-organisation and restructuring of the organisation's internal systems to continuously accommodate the dynamism of technological developments. This becomes a major stumbling block for e-business diffusion in SMEs controlled by older owners or managers. This study endeavours to affirm or disconfirm the observations in extant literature from the perspective of SMEs in the Zimbabwean market place. This is investigated through the first sub-hypothesis based on literature.

H1: Age of management has a significant influence on e-business diffusion in the SME sector in Zimbabwe.

3.1.2 Position in the organisation (SME3)

Management position is consistently discussed as pivotal in the smooth running of any organisation. Management staff are at the helm of crafting, disseminating and supervising the implementation of the policies and strategies of their respective organisations with the support of their subordinate teams. Many studies emphasise the position of the owner/manager as contributing to the diffusion process of innovations. Their attitudes, behaviour, competencies, culture and values, are central to the organisations' acceptance and diffusion of new technologies [7], [28]. Risk-averse managers are regarded as a stumbling block to the adoption of new technologies in their organisations. They focus more on conventional methods of doing business. Owner-managers who exhibit limited competencies than their entrepreneurial colleagues are more likely to perceive difficulties in e-business, hence their reluctance to adopt its use. This is affirmed by Almoawi and Mahmood [29] who note that, if the owners do not appreciate the efficacy of technology in improving the performance of their organisation in various areas of its operations, they will be likely to disregard it. Such disinterest is attributed to the lack of familiarity with the actual mechanics of the process, thus posing a barrier to e-business diffusion. Owner/managers' passion, enthusiasm and a firm belief in the in the usefulness of the technology propels them to take the lead in initiating and engaging e-business in their business activities [18], [29], [25], [30], [31], [14], [28]. The active involvement and interest of management in e-commerce initiatives spurs them to deploy the necessary resources for developing the e-business systems and implementation of the requisite applications [29]. Literature does not treat the dimension of 'position in the organisation' in detail as a separate independent variable, but incorporates it in managers' general influence on adopting new technologies. This study considers the 'position in the organisation' as an independent factor which contributes to the managers' influence on the process of e-business diffusion. The sub-hypothesis to test the significance of this dimension is given below.

H2: Position of management has a significant influence on e-business diffusion in the SME sector in Zimbabwe.

3.1.3 Years of experience (SME8)

It is a general assumption that experience accumulated in business over the years elevates the incumbents' level of tacit knowledge which makes them aware and alert to the intricacies inherent in their business sector. This improves their confidence and self-assurance, which become the driver for adopting innovations that enhance their operations. Based on the same rationale, it is envisaged that the number of years that managers spend in their industry makes them more amenable to innovations which improve their organisations' competitive standing. This is in line with Mpofu, Milne, Watkins-Mathys [32] point that SME owner-managers who do not have prior exposure or experience in e-business may pose as a stumbling block to its diffusion. They lack the knowledge and appreciation of how e-business operates and benefits an organisation, in comparison to their experienced counterparts. This variable is not explicitly analysed in literature as a separate determinant of e-business diffusion. However, in

this study, it is taken separately as an integral part of managers' attributes that contribute to their inclination towards diffusion of new business models in their respective organisations. It is considered important in boosting their confidence and readiness to adopt the latest business models because of their experience with the general global business environment in which their organisation operates. The analysis of this dimension as part of the organisational context is a contribution of the current study to extant literature. It is investigated through the study's third sub-hypothesis.

H3: Years of experience have a significant influence on e-business diffusion in the SME sector in Zimbabwe.

3.1.4. Level of Education (SME2)

Wanjau, Macharia and Ayodo [25], in their study on the adoption of e-commerce in the Tourism industry in Kenya, also found that educational level has a large bearing on the adoption of electronic commerce. However, this dimension is another factor which is not explicitly mentioned in literature as a prerequisite to e-diffusion. Most studies make reference to it implicitly in discussing the importance of management attributes in adopting new ideas in organisations [33], [18], [34], [14]. The rationale for this study in presenting 'level of education' as an important contributor to e-business diffusion is that the owner-manager's educational level anchors their capability to learn and acquire new knowledge and skills required for ICT applications. Rogers [34] considers highly educated people as innovative and aggressive seekers of new ideas and readily embrace the uncertainties of the business environment, unlike their less educated counterparts. This is corroborated by Awa, Ukoha and Emecheta [18] who point out that education influences personal innovativeness, belief/value systems, risk-taking, cognitive preferences, and receptivity of an innovation. This confirms Tornatzky and Fleischer's [14] position that qualified human resources are critical in the firm's move to adopt new innovations, as they possess competent learning and innovative capabilities. The organisation's human resources competency is, therefore, an essential factor influencing adoption of a new technology. A weak educational background can be the bedrock of risk aversion, which militates against adoption of new ideas. Without a reasonable educational qualification, acquisition of innovations can be a harrowing task for the managers who are supposed to take the lead in adopting new technologies to enhance the performance of their organisations. To ascertain the significance of the educational level of management in influencing e-business diffusion, the following sub-hypothesis was formulated.

H4:Educational level has a significant influence on e-business diffusion in the SME sector in Zimbabwe.

3.1.5 ICT training (SME9)

Several studies have noted a strong link between competent human capital and management support with the level of e-business diffusion [35], [3], [19]. ICT training is specifically considered critical to technology adoption by many researchers [36], [21], [28], [35], [18], [33], [37]. The knowledge and skills of ICT is central to management appreciation of the benefits of e-business, allocation of the required resources, setting up the requisite systems and running the related programmes smoothly. This is affirmed by several researchers who note the importance of qualified staff, with the knowledge base and technical skills to deal with the technicalities of e-business, as critical [18], [32], [38], [36], [21], [35], [33]. Trained staff are a key ingredient in creating an enabling environment which is a precursor to the organisational readiness in the process of e-business diffusion [39], [40]. Trained personnel take the lead in the establishment of the ICT processes and programmes in the organisation and provide maintenance and technical support that is required. A technology savvy management team, backed by tacit knowledge of the industry accumulated over the years, is the bedrock of e-business diffusion and its operational success in an organisation [35], [28], [36]. Such a knowledgeable team will advocate for the requisite financial and human resources necessary for setting up systems needed for the implementation of the ICT programmes to enhance organisational performance, giving it a competitive edge. Internal knowledge and skills enable management to select e-programmes appropriate for their enterprise's specific needs, without relying too much on external experts who might not be aware of their precise requirements [15]. Lack of internal knowledge and skills can hinder the diffusion process of e-business or any other innovative business ideas [29]. The majority of studies are in agreement with respect to the importance of staff training in ICT in order to facilitate the diffusion process of e-business. The foregoing discussion gives rise to the fifth sub-hypothesis of the study.

H5: ICT training has a significant influence on e-business diffusion on the SME sector in Zimbabwe.

3.1.6 Attitude to technology (SME10)

Attitude to technology is posited by several researchers as one of the key drivers of e-business diffusion in extant literature [41], [35], [4], [7], [33]. Management attitude to technology can be a result of several factors which affect their perception of the compatibility, complexity and relative advantage of the new applications in relation to their existing internal operational environment. The attributes that have been discussed above, namely, age, educational attainment, ICT skills and years of experience can also be contributory to the attitude towards technology. The age of key personnel plays a significant role, as posited by several researchers [23], [18], [24] [25]. As pointed out earlier, the younger executives have been considered more amenable to diffusion of new technologies than their older counterparts. The level of education and ICT skills have been regarded as a basis for positive attitude towards adoption of e-business [18], [29] because they elevate the incumbents' appreciation of the technical aspects and advantages of the technological applications. Lack of ICT skills and appreciation of the efficacy of ICT in enhancing organisational performance can create negative perceptions that hinder e-business adoption [42], [2], [8], [28], [25]. Years of experience in the organisation or business in general renders the personnel more open-minded, an attribute which facilitates diffusion of new ideas. Availability of financial and qualified human resources are also considered as enablers for e-business diffusion. The presence of all these factors create a positive perception which enhances management's attitude towards e-business adoption, while their absence can have the opposite effect. These observations in literature are interrogated and analysed through sub-hypothesis six which is stated below.

H6: Attitude to technology has a significant influence on e-business diffusion on the SME sector in Zimbabwe.

3.2 Organisational Factors

The organisational factors are directly linked to the operational capabilities of the respective firms.

3.2.1 Years of operation and e-business diffusion (SME4)

The longer the organisation has been in operation, the more it is likely to have a strong resource base in terms of financial resources, experienced human resources and a well-developed internal operational infrastructure. There seems to be two opposite views with regards to the effect of a company's years of operation on e-business diffusion. Some researchers assert that the older the organisation is, the more it favours the status quo. This means they adopt a negative attitude towards implementing new technological systems [43], [44], [35]. On the other hand, other studies posit that age of the firm is positively associated with the diffusion of ICT systems [45], [46], [47], [19], [41], [48], [28], [3]. These researchers associate the age of an organisation with accumulation of resources and increase in size, which factors favour the adoption, development and implementation of electronic systems as the effective and efficient business model [49]. The number of years an organisation is in operation is, therefore, considered to impact on its readiness towards e-business diffusion. However, some researchers consider those firms that are new to be more flexible and adaptive to new technologies as they are not burdened by established old systems. Nevertheless, the lack of resources for such nascent firms is considered as a drawback in accessing the requisite resources to adopt a robust e-business system. This study endeavours to ascertain the impact of the organisation's years in operation on e-business diffusion in the Zimbabwean SME sector. This is analysed through the seventh sub-hypothesis.

H7: Years of operation of the organisation have a significant influence on e-business diffusion in the SME sector in Zimbabwe.

3.2.2 Influence of size and e-business diffusion

A plethora of studies posit firm size as one of the major factors influencing the adoption of new technology in organisations [34], [14], [46], [18], [19], [42], [35], [3].The size of an organisation is generally related to its resource base and extent of its infrastructure and management levels. A big organisation is normally associated with adequate resources for internal growth and development and the ability to adopt new innovations [18], [19], [42], [35], [3]. The smaller organisations are usually portrayed as under-resourced and struggle to cope with the ever-changing business environment [45], [50], [22], [28], [3]. Although small organisations are depicted as more flexible in instituting changes because of their small size, it is also noted that their limited financial and human resource base slows down their pace in the uptake of new innovations. Size is measured in a variety of ways by different researchers. Gholami, Koh and Lim [51] and Ajayi [38] characterise size of SMEs by number of employees, annual

turnover and assets. Some of the measurements common in research are: number of customers, number of departments, complexity of management, and annual sales [14], [52], [53], [3], [35].

This study adopts three measurement factors for size, namely, number of employees (**SME5**), gross asset value (**SME6**) and annual turnover (**SME7**). Literature treats them in a composite way under size but the current study measured them separately to ascertain their individual impact on influencing e-business diffusion in SMEs. The researcher envisaged that the separation of these factors would be more helpful in showing their individual importance in driving the firm to adopt e-business as its strategic business model, in line with the general trend of global developments. This was operationalised through the analysis of three sub-hypotheses pertaining to each factor. The approach added a new thrust to literature by assessing the significance of the three components of size separately.

H8: The number of employees has a significant influence on e-business diffusion in the SME sector in Zimbabwe.

H9: Gross value of assets has a significant influence on e-business diffusion in the SME sector in Zimbabwe.

H10: Annual turnover has a significant influence on e-business diffusion in the SME sector in Zimbabwe.

The ten sub-hypotheses constitute the main study hypothesis (**H10**) as shown in F**igure 1**.

3.3 Study Conceptual Framework

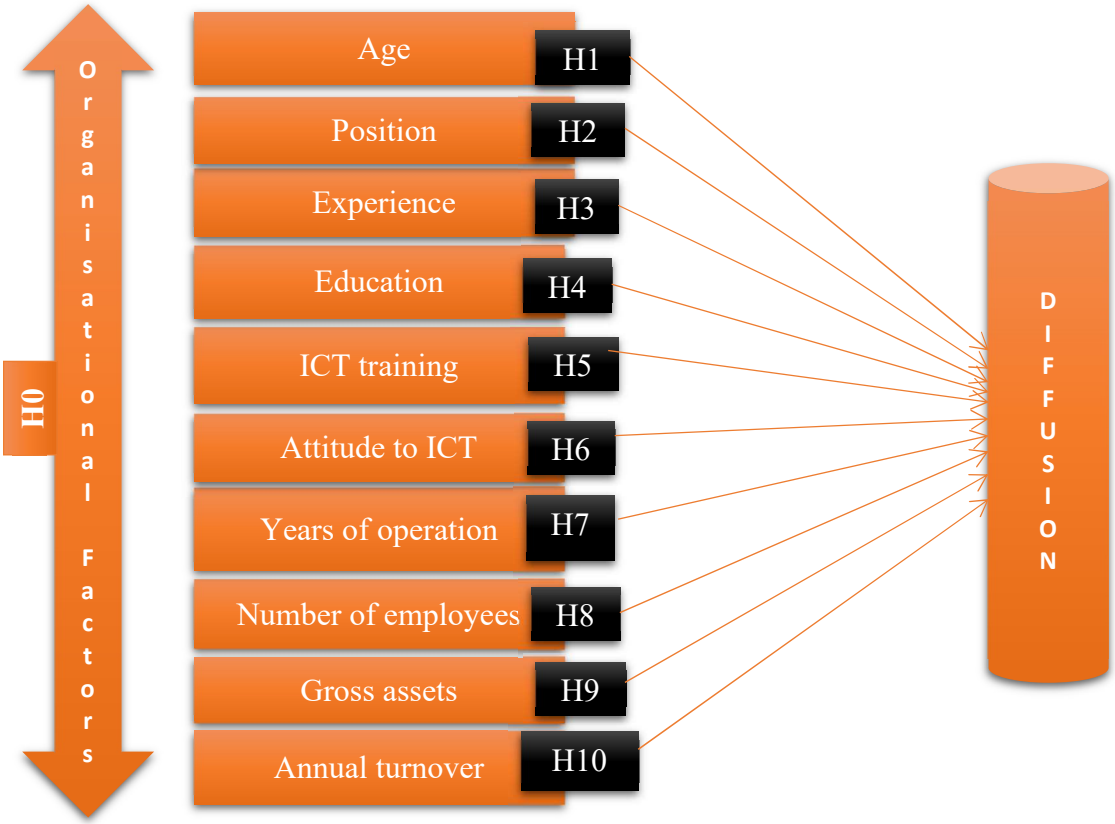

Figure 1: SME Factors Influencing E-Business Diffusion: Researcher's Conceptual Framework (2023)

IV. Research Methodology

4.1 Research Design, Target Population and Sampling

This study is anchored on a positivist research philosophy which is quantitative in nature and deductive in approach. The choice of the positivist philosophy was based on its objectivity and the assumption that the object of the study and the researcher are separated, hence minimising the element of researcher bias [54], [55], [56], [57]. An explanatory perspective was adopted to aid in explaining the relationships between the variables under study [58]. To enhance clarity and understanding of the

relationships that manifested in the quantitative data analysis, the researcher also employed an inductive approach to reinforce the deductive approach [56], [59], [60], [57]. The selected research design was envisaged more suitable to achieve generalisable and unbiased study results.

The **target population** was the totality of all SMEs in Zimbabwe to which the final results of the study could be generalised. From this population, the researcher derived the **study population** from the Harare Metropolitan Area. This area is the hub of SME activities and is endowed with both the hard and soft infrastructure which is the vital cog in e-business diffusion. It was also considered to be adequately representative of the SME population [61], [62], given the generic characteristics of the target population. To ensure an equal chance of selection for all units in the sampling frame, the researcher adopted a **probability sampling** strategy, using simple random sampling. By virtue of its nature, simple random sampling covers a wider population, thus enhancing the aspect of generalisability of results [63], [57], [64], [65].

4.2 Data Collection

The researcher utilised a questionnaire as the data collection instrument through survey monkey online application which has a wide reach and is suitable for studies based on large sample sizes. The survey approach and the questionnaire were envisaged to improve the generalisation of results to the population as a whole [66], [24], [55], [56], [57], [67]. The use of a questionnaire as a numerical data collection instrument also aligns with statistical data analysis in the quantitative strategy adopted for this study [68], [59].

4.3 Data Analysis

The data was derived from the collected demographic statistics which were adopted as proxy for SME characteristics. Data analysis was conducted through descriptive and inferential statistics and ultimately, structural equation modelling (SEM). The descriptive statistics helped the researcher to describe the distribution of data through measures of central tendency and measures of dispersion. Inferential statistics were utilised to establish the significance of the study outcomes [69], [70] with ANOVA as the main inferential test to extract the organisational characteristics which showed a significant impact on e-business diffusion. These factors were further analysed through structural equation modelling (SEM) and goodness of fit tests to validate the study model in line with the research's conceptual framework. To achieve all the above, the researcher made use of IBM SPSS v26 and IBM SPSS Amos v26 (IBM, 2018).

4.4. Results and Analysis

The demographic variables which were used as proxy for the SME characteristics, namely, age (**SME1**), level of education (**SME2**), position in the organisation (**SME3**), years of operation (**SME4**), number of employees (**SME5**), gross value of assets (**SME6**), annual turnover (**SME7**), years of experience (**SME8**) and ICT training (**SME9**), were tested through ANOVA and the results are shown in **Table 1**.

Table 1: Summary of ANOVA tests for SME Characteristics

NAME	Variable Name	*df1*	*df2*	*F*	*p-value*
SEM1	Age	4	570	6.581	0.000
SEM2	Level of education	5	577	3.221	0.007
SEM3	Position in organisation	2	581	1.262	0.284
SEM4	Years of operation	4	582	3.257	0.012
SEM5	Number of employees	7	580	0.409	0.897
SEM6	Organisation's gross value of assets	4	570	6.365	0.000
SEM7	Organisation's annual turnover	4	546	0.079	0.989
SEM8	Years of experience in organisation	4	581	1.573	0.180
SEM9	Training in ICT	1	583	21.502	0.000

From the ANOVA tests, out of the nine variables tested, five were found to be significant. These five variables were: age (**SME1**), level of education (**SME2**), years of operation (**SME4**), gross value of assets (**SME6**) and training in ICT (**SME9**). Age, gross value of assets and ICT training exhibited the highest significance, followed by level of education and years of operation, respectively. These ANOVA results were further tested using the structural equation modelling (SEM) IBM SPSS AMOS version 26 to confirm the significance of these variables and come up with the final empirical model for the study. The other four factors, namely, position in the organisation, number of employees, annual turnover and experience, were excluded from the SEM analysis as their influence on e-business diffusion was not significant according to the result of the ANOVA tests (**Table 1**).

The tenth variable, '**attitude to technology**' (**SME10**), was not included in the ANOVA analysis as it was not part of the demographic statistics but rather a behavioural state deriving from the respondents' perceptions regarding the efficacy of technology. This variable was combined with the five SME variables that emerged as significant in the ANOVA tests and they were tested together to validate the final model for the study. The results of the SEM are given in **Table 2**.

Table 2: SEM – Standardised Regression Weights for SME Factors

	Estimate	Standardised	S.E.	C.R.	P
DIFF <--- SME1	-.025	-.101	.010	-2.601	.009
DIFF <--- SME2	.024	.102	.009	2.632	.008
DIFF <--- SME4	-.016	-.076	.008	-1.965	.049
DIFF <--- SME6	.025	.152	.007	3.707	.001
DIFF <--- SME9	-.020	-.100	.008	-2.524	.012
DIFF <--- SME10	.152	.583	.094	15.298	.001

The SEM results show that all the six factors had *p-values* below the threshold of 0.05. In addition, the critical ratio statistics were greater than the stipulated threshold of 1.96 or above [71], further confirming the significance of the variables. 'Attitude to technology' (**SME10**) had the highest standardised coefficient (0.583), critical ratio of 15.298>1.96 and $p=0.001<0.05$. This was followed by 'gross value of assets' (**SME6**) with standardised co-efficient of 0.152, critical ratio of 3.707 and $p=0.001<0.05$. The lowest of the six factors was 'years of operation' (**SME4**) with $p=0.049$. Overall results thus show that, out of the ten variables adopted for the study, six factors had a significant impact on driving the diffusion of e-business. To confirm the validity of the model derived from the SEM analysis, goodness-of-fit tests were conducted in accordance with methodology researchers [71], [73], [74]. The model fit tests carried out to test the model were absolute fit indices, relative fit indices, parsimonious fit indices and non-centrality based fit indices [75], [76], [77]. **Table 3** shows the results of goodness-of-fit indices.

Table 3: Model Fit Results for Final Mode

Goodness of Fit Index	**Threshold(s) and author(s) supporting**	**Finding(s)**
CMIN/DF	<3.0 [78] *p-value*>0.05	2.013<3.0; (*p* 0.06>0.05)
CFI	>0.90 [79]	0.928>0.90
PNFI;PCFI	>0.5 [79]	0.604; 0.664>0.05
RMSEA	<0.7 [77]	0.162<0.7

From the findings, CMIN (χ^2/df) was 2.013<3.0, and *p-value* 0.06>0.05, which meant that the model was a good fit [78]. For the baseline fit model, the CFI was greater than the general cut-off point of >0.90 at 0.928, thus confirming that the research model was indeed valid. Furthermore, the PNFI and PCFI were 0.604>0.5 and 0.664>0.5 respectively, confirming a good fit of

the model parsimony. The findings also show the RMSEA statistic falling within the acceptable threshold at 0.162<0.70 [77]. Collectively, the goodness-of-fit tests confirm the validity of the study model.

V. Discussion and Hypothesis Validation

The following sub-sections give a brief discussion of the ten variables examined in this study and their respective impact on e-business diffusion.

5.1 Age (SME1) (H1)

'Age' showed a negative standardised path coefficient of -0.101, a standard error of 0.010 and critical ratio of -2.605<1.96. The path coefficient indicated that there was a negative relationship between age and the diffusion of e-business. The *p-value* of 0.009<0.05 affirmed the significance of this relationship. As age increased, the inclination towards diffusion decreased. This is a logical finding in the Zimbabwean context where the use of technology only started to make inroads into the business arena about two decades ago. This means that the younger generations (largely from Generation X onwards – 1965 to date) who were born and/or raised in the technology era easily embrace it as they were exposed to it at an early age. They are characterised by creativity, independent outlook, entrepreneurial spirit and emersion in technology and social media. Because of this, technology becomes second nature to them. The older generations (from mid-20th century to the Baby Boomer generation – 1946-1964) have a phobia for technology and find it rather daunting, hence their characterisation as '**the analogue generation**'. They find modern technology rather disruptive, very demanding and costly, requiring continuous changes in the organisation's current systems because of its dynamic nature. They consider changing from the status quo rather risky, as it overturns familiar operating models and replaces them with complex technological applications which they are not accustomed to [26], [27]. This explains the strong negative correlation that was found in the data analysis between age and diffusion. Literature affirms this position, upholding that older managers are less inclined to technology diffusion, while the younger personnel display a high propensity for diffusion [23], [18], [24], [25].

From the above discussion, the hypothesis,

H1: Age of management has a significant influence on e-business diffusion in the SME sector in Zimbabwe was validated.

5.2 Level of Education (SME2) (H4)

'Level of education' showed a significant positive relationship with e-business diffusion, given the standardised path coefficient of 0.102, standard error of 0.009, critical ratio of 2.632>1.96 and p=0.008<0.05. It makes logical sense that the more educated the personnel, the more they are likely to embrace the use of e-business. They are mentally equipped to grasp the technical component of the electronic models adopted by their organisations. Generally, education is seen as the basis for personal innovativeness, rendering individuals less intimidated by the latent risk inherent in new innovations. Their belief/value systems are no longer an inhibition to them as they rely more on their cognitive capacity to interpret and adapt to new information. A weak educational background is associated with risk aversion, which makes the prospective users rather wary to inevitable changes brought about by innovations [14], [18], [41], [35]. While the Zimbabwean population is renowned as one of the most highly educated nations in the sub-Saharan Africa and the world at large, this has not been reflected in the level of e-business diffusion in the SME sector. This state of affairs can be attributed to other factors like limited financial resources, lack of business development support from government and other relevant authorities, poor national technological infrastructure, the general ailing economic situation, the cost of establishing and maintaining the requisite electronic systems and the prohibitive financial, legal and legislative contexts. Furthermore, some SMEs engage in mere subsistence business operations for family sustainability rather than establishing business as a going concern. The complexity posed by the fast changing pace of technology which requires constant changes and upgrade to the current operating systems, accompanied by training and retraining of personnel, also impinges on their readiness to adopt e-business. From the analysis of the results and the foregoing discussion, the hypothesis, ***H4: Level of education has significant influence on e-business,*** was thus accepted.

5.3 Position in the Organisation (SME3) (H2)

'Position in the organisation' had no significant influence on e-business diffusion with p=0.284>0.05 in the ANOVA tests. The factor was thus discarded at that preliminary stage of analysis. This result could be explained by the fact that the majority of

the respondents were in the age range of 40-60, which falls in the Generation X and earlier age group – mid-20th century to 1964. The analysis of 'age' in relation to diffusion, given above, shows that age has an inverse relationship with e-business diffusion – the older the management, the less inclined to adopting new technology, while the younger they are, the more they embrace it. This affirms literature which propounds that younger personnel are more likely to adopt novel ideas than their older counterparts [25], [18], [80], [81], [26]. Since managers are supposed to be the drivers of change in organisations, the fact that the majority of senior personnel in the study fall within the older bracket, dubbed the 'analogue generation', diffusion is slowed down because of their preference for the status quo, in addition to other possible limitations as cited earlier. This means that the position of management in the organisation is likely to be positively influential in adopting e-business if they fall within the 'digital age' groups (1965 to date). On the basis of the findings of the study and analysis of the results, the hypothesis, ***H2: Position of management has a significant influence on e-business diffusion in the SME sector in Zimbabwe,*** was refuted.

5.4 Years of experience (SME8)

The study results showed that ***'years of experience in the organisation'*** **(SME8)** did not have a significant influence on diffusion with p=0.180>0.05. This variable was discarded at the ANOVA tests stage and not included in the SEM analysis because of its high *p-value*. The researcher envisages that this result is reflective of the finding on the age of management, where it was observed that the majority fell in the older age bracket, which displayed a low inclination towards the adoption of technology. It also reflects the low level of management with ICT skills, which renders the number of years in the organisation ineffectual. This finding corroborates the assertion that owner-managers without exposure to e-business are a stumbling block to its diffusion [32]. The evidence in the research shows that, the hypothesis, ***H3: Years of experience have a significant influence on e-business diffusion in the SME sector in Zimbabwe***, was not validated.

5.5 ICT Training (SME9)

The finding on ICT training shows that there was a significant negative relationship between ICT training and e-business diffusion. ICT training was found to have a significant negative relationship with e-business diffusion (standardised path coefficient of -0.100, standard error of 0.008, critical ratio of -2.524 <1.96 and p=0.012<0.05). The result is corroborated by various researchers who found ICT training important in facilitating diffusion [18], [35], [28], [36]. This finding shows the critical importance of human resource training in ICT skills in order to equip both the workforce and management with the requisite skills which are at the centre of e-business development and implementation [41], [19], [35]. The finding is a reflection of the poor training levels of the staff in the sampled SMEs and this resulted in the negative correlation of the ICT training and e-business adoption. This shows that if there was adequate ICT training of staff there would have been a positive correlation with e-business diffusion. Therefore sub-hypothesis, ***H5: ICT training has a significant influence on e-business diffusion on the SME sector,*** was confirmed.

5.6 Years of Operation

'Number of years in operation' showed a significant influence on e-business diffusion, with the standardised regression coefficient of -0.076, the standard error was 0.008, the critical ratio of -1.965<1.96 and a *p-value* of 0.049<0.05. This result points to the significant impact that an organisation's sustained existence in business has on its ability to diffuse new ideas into its operational systems. This derives from the accumulation of knowledge acquired in their respective business sectors over the years. The accumulated knowledge and skills reduce the risk aversion that characterise fledgling enterprises and render the experienced firms bolder in adopting trending business ideas. From the analysis of the findings, ***H4: Years of operation (SME4) have a significant impact on e-business diffusion in the SME sector,*** was confirmed.

5.7 Size of the organisation

Literature review has shown the 'size of the organisation' as a composite variable derived from a number of factors like, number of employees, number of customers, number of departments, complexity of management and annual sales [39], [42]. Size, as a composite measure, was posited as a significant driver of diffusion of new innovations [14], [82], [83], [46], [84], [50], [18], [19], [4], [3]. In this study, the size of the organisation, is measured through three factors, namely, 'number of employees', 'annual gross turnover' and 'gross value of assets'. This is a departure from extant literature which does not use these specific variables as separate measurement scales. As pointed out in section 3.2.2, the researcher's objective was to measure each of the

variables individually to ascertain which of them is significant in driving e-business diffusion. This is discussed in the following sections.

5.7.1 Number of Employees (SME4) (H8)

According to the ANOVA test results ***'number of employees'*** was not significant in influencing diffusion as shown by its *p-value* of *0*.897>0.05) (**Table 1**). This was contrary to the findings in extant literature [35]. This result indicates that use of technology is not dependent on the number of people working in the organisation but rather on the psychological readiness towards the adoption of e-business as determined by the firm's resources, age of personnel, their educational attainment and ICT skills, among other factors. This is a logical result as the use of technology has always been associated with the reduction of personnel required to carry out certain tasks in operations. This is especially evident in those related to manufacturing, tourism industry and financial services. Hence, one would envisage that it is determined mainly by the industry in which the firm operates rather than by a high employee compliment. The results and the foregoing analysis and discussion have shown that 'number of employees' is not a determinant of e-business diffusion. Therefore, ***H8: Number of employees has a significant influence on e-business diffusion*** was rejected.

5.7.2 Annual turnover (SME7) (H10)

'Annual turnover', was found to have no impact on the diffusion of e-business. It was eliminated in the preliminary ANOVA tests with a *p value*=0.989>0.05 **(Table 1)**. This shows that this variable is not a determinant of e-business diffusion. It denotes that the state of the organisation's annual turnover is not indicative of a healthy financial position which is generally associated with the company's ability to acquire the essential technological equipment and training of competent ICT personnel equipped to develop the firm's internal ICT infrastructure. ***H10: Annual turnover has a significant influence on e-business*** *diffusion* was thus rejected.

5.7.3 Gross value of assets (SME6) (H9)

This variable was found to have a significant influence on e-business diffusion. It had the highest significance (p=0.001<0.05) among all the SME variables **(Table 2)**. The variable is not presented as a standalone factor in literature, but mentioned in passing as an integral part of size. Analysing it as a separate aspect is a contribution of this study to existing literature as '*gross value of assets*' has not been specifically singled out before to test its significance in facilitating e-business diffusion. High value of assets is a firm's strong pointer to its stability and signals its capability to adopt new technologies [50], [19]. From the results, analysis and discussion, sub-hypothesis ***H9: The gross value of assets has a significant influence on e-business diffusion***, was corroborated.

VI. Conclusions And Recommendations

The results of the research and their analysis showed that, out of the ten organisational factors investigated in this study, six were found to have a significant influence on e-business diffusion in the Zimbabwean SMEs. These six identified variables constitute the study's empirical model as reconfigured in **Figure 2** below.

6.1 The Empirical Study Model for e-Business Diffusion in the SME Sector

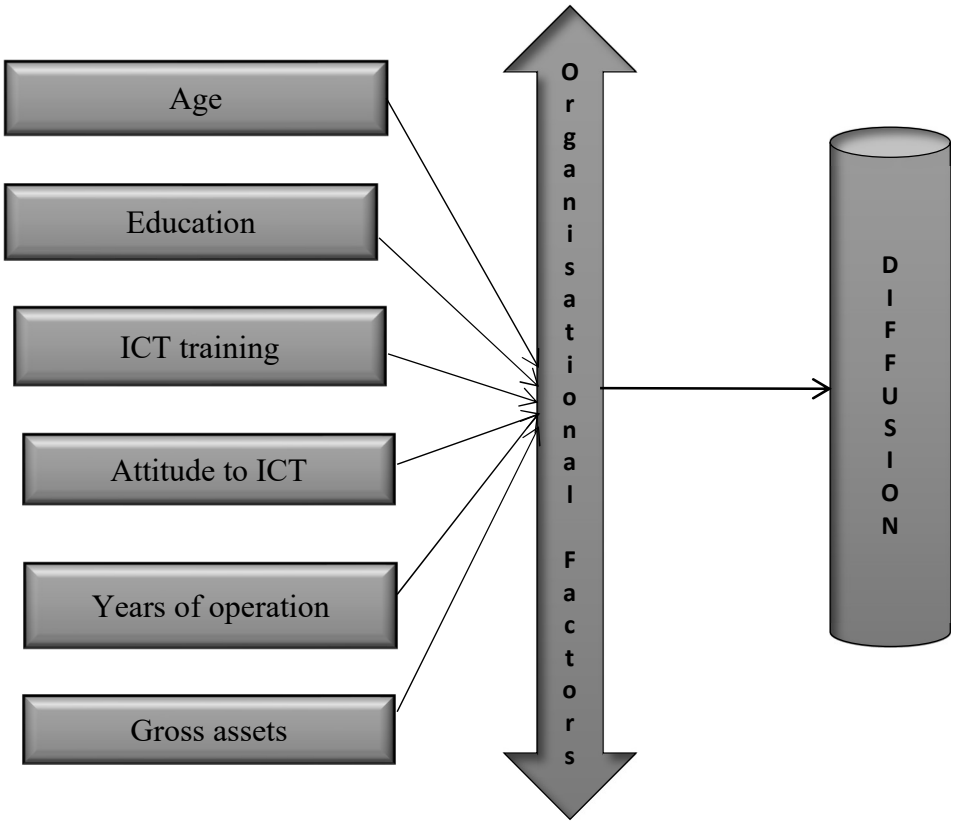

Figure 2: Factors Influencing e-Business Diffusion in the Zimbabwean SME Sector

6.2 Conclusions

There were ten SME factors advanced as predictors of e-business diffusion in the conceptual framework of this study (**Figure 1**). The tenth factor accorded to the SMEs was *attitude to technology* which was based on Rogers' [85] technology dimensions. This was based on the argument that the firm's attitude towards the technology in use, as displayed by its owners and management, will determine its readiness to adopt it. This is also linked to Davis' [86] dimensions of *perceived usefulness* and *perceived ease of use* as facilitators to users' acceptance of technology. Out of the ten firm characteristics, the study concluded that, *position in the organisation*, *number of employees* (**SME5**), *annual organisational turnover and number of years of experience,* have no significant influence on e-business diffusion. *Age of the management/owner managers*, *years of operation of the organisation, gross value of assets*, *ICT training* and *attitude towards technology* have a significant influence on e-business diffusion. Overall, the study concluded that SME characteristics have a significant influence on e-business diffusion in the SME sector in Zimbabwe anchored on *age of management*, *educational level*, *years of operation of the organisation*, *gross value of assets*, *ICT training* and *attitude towards technology*.

6.3 Recommendations

From the foregoing discussion, analysis and conclusions, the following recommendations were made:

6.3.1 Owner-managers should employ managers who have the requisite technical know-how to lead the strategies of e-business diffusion. They should embrace the young generation at the centre of the development of the technological systems that will enhance their organisational growth and sustainability in the current technology era and for the future.

6.3.2 Government should provide an enabling environment which allows accessibility of the much needed capital and financial resources, as well as a conducive business and legal landscape for SMEs to be more innovative and become worthy participants in the national economic arena for both their internal and national development.

6.3.3 Government should also seriously pursue the establishment and operation of the free processing zones and allow the small-to-medium enterprises to participate in such zones and give them the opportunity for an assured market. This is likely to encourage them to adopt e-business in their operations to gain a competitive edge.

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