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Review Article

Assessing Qualitative Variables by Forecasting Kenyan SMES Non-Success: Towards Latest Innovation Replica

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Abstract: Financial failure assessment is a very significant and extensively discussed topic in international academic study. In Kenya, the research that has been conducted on forecasting unsuccess SMEs was concentrated on modelling approaches using outdated techniques. The outdated approaches, is still the currently type of the disloyalty applied is limited to qualitative financial variables. It is important to look back that these characteristics of different values have been criticized for dual motives: first of all, was initiated in static way for financial information and accounting, which means that it is changeless or consistent. Secondary, the financial information and accounting dependability offering to decision-makers. This research describes an assessment of the literature on the significant of uncompromising variabilities in the expansion or growth of innovation and numerous effectual prediction model. It is evidently that the great value of unfinancial dependability in the procedure for increasing additional appropriate forecasting models. It is representing a non-exhaustive list of macroeconomic variables, from which bumpily major restrictions are resulting and previously limitations after explanatory feature are supposed to go belly up. Therefore, through this assessment, we wanted to reply binary dominant quizzing that revolve approximately the variables for forecasting failure, and roughly the probable of these factors that are liable to vary or change in enhancing the value or quality of the perfection of existing estimation replicas on dual echelons: the fascinated and correctness predictions.

Keywords: Assessing, qualitative, variables, forecasting, SME, Innovation and replica.

1. INTRODUCTION

In many African countries the Small and Medium Enterprises (SMEs) are an engine that propel economies, nerveless in some countries it has showed non-success due to the numerous challenges they are continued pebbledash. For instance, in Kenya. The SMEs are uncomplicated to start as inhabitants are inspired, innovative and filled with business ideas; the motive why they are quite plentiful, quoted by the Kenya Agribusiness and Agroindustry Alliance, Chief Executive Officer, (M. Lucy, 2016). Therefore, the main challenge faced by these enterprises is that they cannot last in the market for durable period in the sight of being gradually stopped or closed down through firmly established businesses. The great number of these businesses' owners are normally left in an unpleasant situation compared to the level were previously after the collapse of their firms. They usually left with no position to fall back since capitals have been bankrupted by their fallen enterprises, (Economic Survey, 2006).

According to the Kenya National Bureau of Statistic, (2007). The SMEs area subsidised more 50% of job creation in the year of 2005. Despite their importance they have in country's economy, the past indicators have shown that three out of five businesses fail within the beginning of few months' operation and the one most significant challenge facing these enterprises is the bad perception towards them. The possibly customers consider small businesses as lacking capability to deliver fineness services and being incapable to please additional than single critical task simultaneously. Habitually high companies are carefully chosen and given opportunity for their power in the industry and tag recognition exclusively, (Amyx, 2005).

Thus, given the significant role that Banks play in financing the activities of Kenyan businesses, it's vital to understand how Kenyan Banks can lessen the likelihood of payment failure by Kenyan SMEs. Despite the wealth of literature on failure forecast systems in Kenyan enterprises, it's worth noting that, despite the wealth of literature on failure forecast at the

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international level, few works have addressed failure prediction in the Kenyan context, (M. Bowen, Samuel M. & Makarius M, 2009). The general advance in the accurateness and effectiveness of the replica for predicting the probability of failure should be linked to the selection of proportion in particular. Which ratios should be chosen? How many amounts to choose and how to select them appropriately?

In the same way, (Ooghe & Balcaen, 2006), agreed beginning from their research done on the prediction of default during last 35 years. Stating that there are a few agreements on the best variables to retain for discerning between companies' failure of those who are not, this disagreement stems from the absence of a framework theory for the selection of variables. Practically, the selected variables used to develop a model for predicting the risk of failure in a given context, are constantly specific to this context, to the environment and to the study sample, which makes the results difficult to generalize.

Indeed, most subsequent studies, if they are interested in prediction with models based on quantitative variables, they ignore the importance of integration qualitative variables in the prediction. Highlight the importance of qualitative variables in forecasting models, could make it possible to better improve the existing forecasting systems and contribute to the design of more effective replicas.

This research study aims to answer two main questions, in specific: Which variables factors qualitatively can be included in SMEs failure prediction? To what extent these variables will help improve existing SMEs forecasting systems? The objective of this research is to present a proposal of certain decisive component to consider when granting recognition and also likely to improve the available forecasting systems of the SMEs failure. The rest of the research will be organized as follows, we will present qualitative variables which are microeconomic and macroeconomics qualitative variables way. We will try to present basic element and select some variables from each data to demonstrate its importance in the development of a relevant failure prediction model. Then we will highlight the power of qualitative variables in improving forecasting on financial failure systems. This research will be rounded off by the significance of combining financial and non-financial components in the designing failure prediction models innovatively and efficiently.

2. QUALITATIVE VARIABLES

In the estimation procedure of the risk associated with SMEs failure, it's normally based on a subjective use of knowledge to process qualitative information in different stages, namely: preliminary investigation, analysis of the situation, financial situation, industry risk, the evolution of the financing strategy and SMEs estimated risk for default. Qualitative information that can be used to estimate the risk of default payment involves many elements of risk; these rudiments are categorized into six risks factors, in particular: industrial risk, management risk, financial flexibility, credibility, competitiveness, operational risk. According to Myoung & Ingoo, (2003) they discovered that the largest Bank in Southern Korean and numerous businesses companies are often established and used these six factors.

Others risk factors associated with aforementioned process which appeared to be important and playing a vital role in the procedure of prediction of the SMEs failure namely: the general assessment of the business performance, company insolvency settings, payment settings, reorganization, differentiation component, marketing sector, distribution, productivity component. To measure the context of the company, many researchers have suggested that it's significant to pay more attention particularly: to qualitative variables and these variables often come from several sources, notably: business registers, credit registers, press advertisement and annual reports. To collect this information, it should be noted that it's closely linked to the size and legal form of each company, (Yi-Chung, 2009), (Omur & Kasirga, 2009).

According to European Union (EU) regulations, an enterprise is any entity engaged in economic activity, regardless of its legal form. The EU defines SMEs as having 10 to 250 employees, a turnover of €10 to 50 million, or assets worth €10 to 43 million. As a result, businesses can be classified based on a variety of criteria. Companies are divided into four sizes: (a) micro, (b) small, (c) medium, and (d) large. Small and medium-sized enterprises (SMEs) are of great significance to a country's economy.

More than 99% of existing firms in the EU are SMEs; they account for two-thirds of all employment opportunities and 60% of value added. SMEs are thus economically and socially important. They are not only considered as a major driver of job creation; they also encourage innovation, the implementation of business ideas, regional economic integration, and the maintenance of social stability. Therefore, taking into account the significance of the SMEs in economic growth of the country, it's for great important to analyse the implication they engender specifically through assessing qualitative variables by forecasting the probable risks that can cause SMEs failure.

Table 1 below represents some qualitative interpretative variables of the failure of a microeconomic and macroeconomic direction

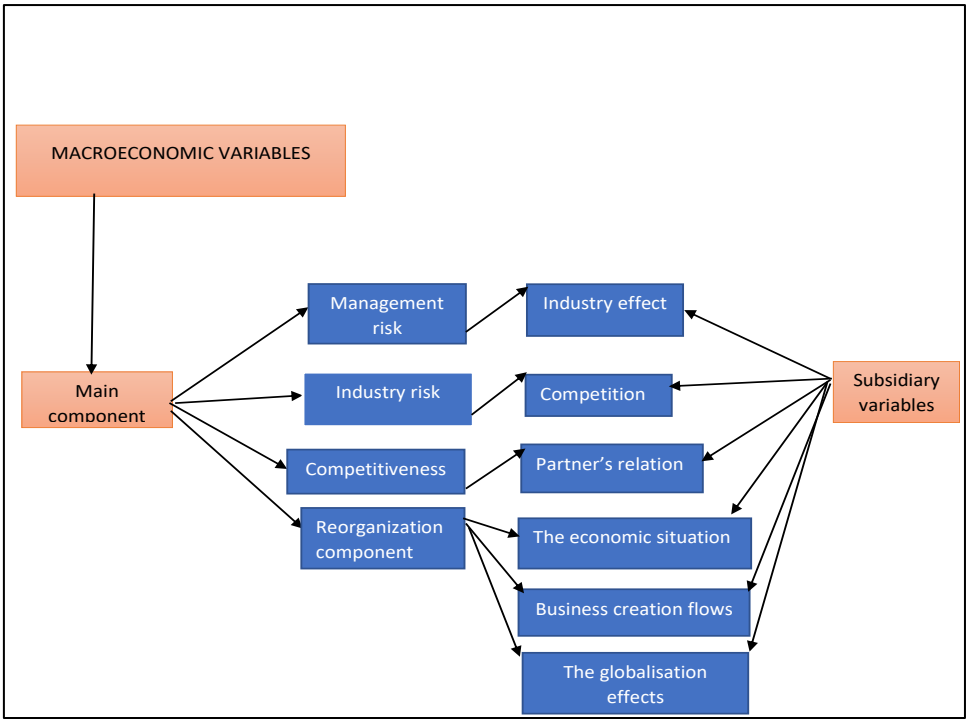

Illustration 1: Qualitative macroeconomic variables
Source: made from the above-stated literature review

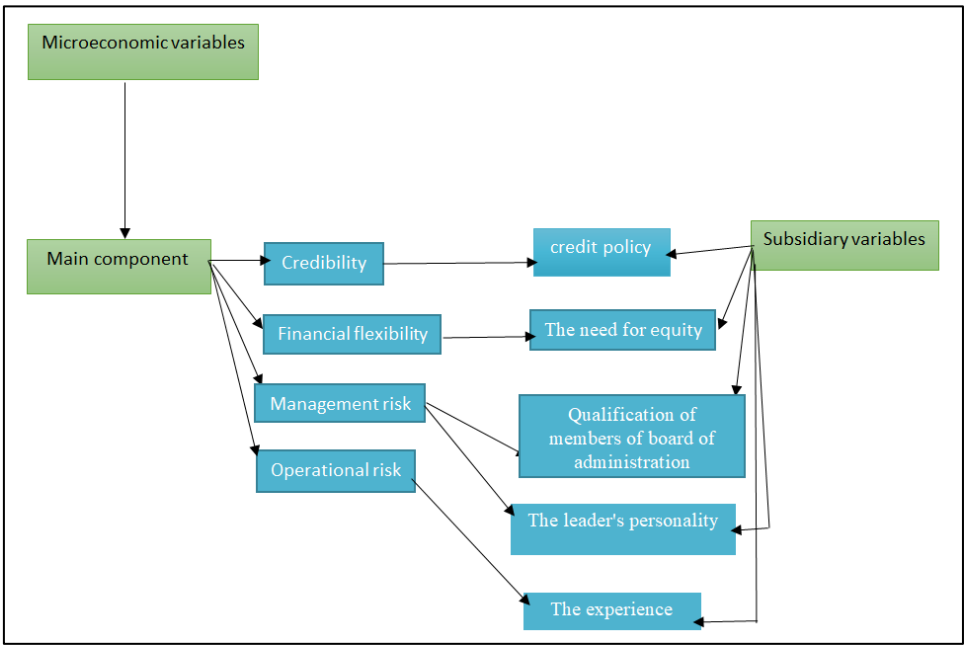

Illustration 2: Qualitative microeconomic variables
Source: made from the above-stated literature review

Qualitative variables have a strong potential in the failure process, the illustration 1 summarizes the main component from which we assume certain secondary explanatory variables of the failure.

1. Qualitative Macroeconomic Variables

1.1. The Industry Effects

Industry plays a key role in the process of corporate financial failure. Each company is expected to face a similar set of forces in an industry including value chain component strengths and competitive forces, but every industry is supposed to have a unique set of strengths. In the event of general economic and financial recession of the industry in which operates a business determines its success or failure. For example: during the crisis economic and financial year of 2010, companies in the manufacturing, construction, retail trade, financial services were impacted more important.

According to Hawawini, (2003), argued in the same interpretation that companies that operate in attractive sectors can realize even higher yields. Thus, the structure of the business sector of the company is influencing variation factor in performance and may be the main cause for financial failure. The financial failure is affected by enterprise credit for manufacturing, this given that the success or failure of some companies comes almost entirely from industry in these operate, (Laitinen, 2005).

1.2. Competition

According to (Jayet & Torre, 1994) Competition refers to the divergence of interests between several people who have the same purpose, in this sense, it is important to identify the areas of competence of the company by compared to its competitors on the same field and to define the opportunities offered on the branch of activity. a company that masters its field of activities compared to its competitors on a market is said to be a company that has a competitive advantage. According to Porter five forces that offer business a way to analyse and outmanoeuvre their competitors in the marketplace, clarified that knowing who is your competitor, his products, services and how marketing strategies affect you is significant to your survival. Whether you are a big or small company, local business, competition has a direct influence on your success.

Therefore, using Porter's Five Forces model to analyse your competition and understand your position in your industry is one method. The five forces model, developed by Harvard Business School's Michael E. Porter in 1979, examines five specific factors that determine whether or not a business can be profitable in comparison to other businesses in the industry. Using Porter's Five Forces in conjunction with a SWOT analysis will assist you in understanding your company's or business's place in the industry landscape analysis. Porter's Five Forces is a macro tool in business analytics, looking at the overall economy of the industry, whereas a SWOT analysis is a microanalytical tool, focusing on a specific company's data and analysis.

1.3. Relationship with Partners

The relationship with the partners impacts financial situation. The analysis of this relationship is done according to Porter through the analysis of the relationship with five main actors in incidence: suppliers, customers, competitors, new entrants, and substitute products. It is indeed a question of studying in an independent way the power of which has each of these partners and who is able to influence the financial decisions of the company, in particular: pricing policies, payment terms, investment.

Thus, all businesses are guided by two principles: the first is to acquire resources, process, and deliver products and services at a profit, and the second is to manage the risks associated with the process. The greater the risk that a company can effectively manage, the greater its competitive advantage. Those who seek to simply transfer risk, on the other hand, frequently build in potential risk when the issues are beyond the capability or influence of those who are given the risk. Understanding the overall risk profile and assigning appropriate risk to ensure visibility and action is critical to success.

Financial, performance, safety, and external events, whether natural or social/political, are the most common risk habitually thwarting. Relationships are one aspect that is rarely mentioned in any risk brief. This is somewhat surprising given that the breakdown of relationships, such as those between customers, partners, or suppliers, is the most likely risk for any business.

The tendency is to attribute these risks to contractual terms and liabilities, but this ignores the fact that once the contract is invoked, failure is virtually guaranteed. Gaining a customer is said to take years; losing one is said to take minutes; partner interdependence may undermine a complete market strategy; and disengaging a supplier can put a business out of commission. For that reason, understanding relationship risk and effectively managing or mitigating its consequences, on the other hand, should help to build stability and drive success. It should also be acknowledged that risk affects every aspect of the interaction between organizations and individuals, as well as performance.

When considering engagement, it is important to remember that integrated relationships can be used in a variety of situations, and finding the right partner should not be left to chance. Too often, the decision is made by accident or based on long-term experience in a traditional relationship. This is not always the best criterion to use. Most relationships are the result of the evolution of more traditional trading interfaces. When considering a more integrated approach, a good arms length supplier, for example, may not be the best choice.

Recognizing the need for an exit strategy is a critical factor that is frequently overlooked. As relationships become more intertwined, the consequences of disengagement become more severe. Failure to understand and address the consequences of ending a relationship not only introduces direct risk, but it can also frequently impede how organizations work together effectively. The final aspect of relationship maintenance is to ensure that the exit strategy is jointly developed, reviewed, and updated as needed. The exit strategy should not be confused with contract termination, which, while important, addresses another aspect of supplier relationships. The strategy should

emphasize how the parties intend to disengage when necessary while still ensuring effective business continuity and customer support.

A strong relationship will recognize the importance of keeping an eye on change and ensuring that each partner's concerns and needs are met. It is critical to ensure that, while one initiative may come to an end due to a variety of factors, others may and should emerge from successful collaboration.

Positive relationship contributors	Negative consequences for relationships
❖ Corporate sponsorship	❖ Ineffective behavioural management
❖ Devoted leadership	❖ A lack of commitment from stakeholders
❖ Early engagement with stakeholders	❖ Inability to collaborate
❖ Planning that is integrated	❖ Lack of supervision support
❖ Structure of joint governance	❖ A lack of strategic vision
❖ Easy to understand or interpret (Open book)	❖ Poor initial planning
❖ Lucidity of objectives	❖ Insufficient partner evaluation
❖ Relationship management strategy	❖ failure to address cultural issues
❖ Excellent communication at all levels	❖ A lack of a common goal
❖ Joint success ownership	❖ Ineffective defined measurement
❖ Behavioural guidelines	❖ A lack of cost-benefit analysis
❖ Jointly assess risk management	❖ A strong emphasis on risk transfer
❖ efficient information exchange	❖ Concealed agendas
❖ early process integration	❖ Communication breakdown
❖ Collaboration on skills development	❖ Ineffective conflict resolution
❖ Appropriate performance evaluation	❖ Absence of an exit strategy
❖ Integrative continuous improvement	❖ A negative attitude toward contracting
❖ Effective dispute resolution	❖ A lack of creativity
❖ Exit strategy developed in collaboration.	

1.4. Economic Environment

According to Smith & Liou, (2007), argued that the economic situation is a decisive factor in the survival of businesses. Difficult economic conditions represent a major risk that can lead to bankruptcy. Seen that companies lose in terms of turnover (quantities sold and price of sales) which is the cause of a low level of profitability. The percentage of failures increases during periods of crisis and regression and is reduced in the opposite case. As explanatory factors and variables measuring the probability of default are GDP and national GDP, it These are relevant indicators of the economic health of a country. The results of the study conducted by the Treasury in France showed a positive correlation between variations in GDP and business creation and negatively with bankruptcies of business, (Altman, 1983).

Regardless of the state of the economy, your primary goal should be to make your company profitable. Consumer confidence is generally high during periods of economic growth, people have more disposable income, and unemployment rates are low. All of this leads to an increase in the number of people choosing to buy from companies like yours. Jobs are lost during an economic downturn, people are more likely to save, and businesses are put under pressure. If your company is focused on profitability, it means that you can weather tough times and save money during times of expansion. Profitability not only provides peace of mind for any season, but it also allows you to avoid making rash, hasty cuts that you might otherwise regret later.

1.5. Business Creation Flows

At the macroeconomic level, business creation represents a qualitative variable with a power of prediction that is not to be demonstrated. According to Altman, (1983) and Blazy (1993) on the research done they have highlighted on the link between failure and creation of new companies, have all demonstrated the dependence between the rate of business creation and the rate of failure. During the first five years, newly created companies are the most vulnerable to bankruptcy, due to insufficient planning and lack of management.

Bankruptcy forecasting is the art of predicting the financial distress of a business, an organization or a physical person… bankruptcy is a legal status of a physical person or a company that is not able to honour its current liabilities with its active available. Forecasting financial failure is an active area of research.

1.6. The Effect of Globalization

The opening of the national economy to international markets leads to the emergence of new competitors in the domestic market. To this end, competition on the quality offered, on the prices offered and, on the quantities, becomes more important, again the interdependence between markets becomes more important.

2. Microeconomic Qualitative Variables

2.1. The Experience

The age is one of the main characteristics of companies failing, moreover the age range of the latter varies between 6 and 10 years beyond this fraction, companies place themselves in a safer and more secure zone. Furthermore, the bottom level of failure of companies exceeding 10 years of existence on a market shows that these companies learned a lot about the market and accumulated a significant experience, particularly in terms of achieving economies of scale. The more the company grows in a market, the more its management develops skills, knowledge, perfectly master the processes… which influence the business performance, (Nakairi W, 2016).

2.2. Members of Board of Directors' Qualifications

The main functions of the board of directors are classified into two: advisory functions and monitoring and control functions. The monitoring is to prevent management from engaging in behavior that is detrimental at the time discussion is all about helping companies make the right decisions regarding the company's strategy and actions. Board members well-qualified can properly assume advisory and supervisory roles. Referring to the agency theory, the members of the board of directors possessing appropriate qualifications are capable of carrying out their control and advisory activities while reducing agency costs, (Ferreira & Adams, 2007).

According to stakeholder theory, (Gaur, 2015), a more competent board of directors satisfies interest from many stakeholder groups, yet another board qualified is better placed to understand the concerns of all stakeholders and help companies to propose strategies to deal with the different categories of stakeholders, as well as to enhance the resources and expertise provided by the board, (Mackling & Jensen).

2.3. The Leader's Personality

The continuity and sustainability of companies in a market are strongly correlated to the personal qualities of the leader, environmental and psychological factors of the leader are taken into account as causes of business failures. We are talking about certain objective variables, among others: religion, age, education and experience … and subjective variables such as: sociological characteristics, individual characteristics, personal values and human, (Descreumaux, 1998).

2.4. Capital Requirement

According to Altman & Royston (2006) argued that as a decisive qualitative variable in the process of business failure "the availability of capital" the availability of funds necessary and sufficient own resources is an essential condition for the development of businesses and vice versa. The link between business failure and financial management has been studied at the level empirical by several authors in this case; they specified that the maintenance of an appropriate equity capital structure since inception is a critical factor in the survival of the company, (Boardman, 1981).

3. The Power of Qualitative Variables in Improving the Prediction of Business Financial Failure

3.1. Improved Degree of Precision

According to Hillegeist, (2004); Chava & Jarrow (2004), the reliability of qualitative variables in predicting the failure of SMEs is generally low, unlike large state-owned companies that increase the predictive power of default by incorporating market-based variables, (Reisz & Perlich 2007). The precision of SME failure prediction can be improved through the involvement of qualitative (non-financial) variables included in their model for predicting the probability of failure of SMEs only two qualitative elements, in this case the structure of the market and the logarithmic number of employees, alongside eight financial variables, (Gepp & Kumar, 2008).

The two researchers, Keasey & Watson (1987) were the first to deliver a study on the power of prediction of qualitative variables in failure prediction accuracy finance for UK SMEs. They tested the hypothesis of (Argenti's, 1976), the non-financial variables used in this study are as follows:

- A variable related to the age of the company,
- Four variables relating to the management structure (changes of members, potential autocratic regime),
- Eight variables related to the possibility of "rigging the books", such as the delay in the presentation (4), qualified audits (3) and change of auditor (1),
- Three variables indicating leverage,
- Two variables related to the accounting and management system,
- A variable related to age or experience,

These qualitative variables were supported by 28 quantitative (financial) variables in the light of their studies presented three models of forecasting the failure of UK SMEs, a first model based on the variables financial, a second model based exclusively on non-financial variables and a third model based on non-financial and financial variables (mixed model). They concluded that the best predictions can be observed with the use of non-financial variables in addition to financial variables, (Keasey & Watson, 1987).

3.2. The Extension of the Forecast Perspective

According to Du Jardin & Severin, (2012), indicated that the impact of the economic environment on the accuracy of models for predicting the probability of financial failure, they concluded that trajectories provide more important results. The same point of view presented by Du Jardin, (2015), demonstrated how to improve the performance of traditional models beyond the one-year horizon, using models based on the process of failure that take into account the evolution of the financial situation over a short period. He has

designed models that fit the underlying failure process of different groups of firms (healthy, failing) with the inclusion of the variables qualitative. The results of this work show that such models lead to a better accuracy of the failure forecast which is spread over a 3-year horizon and that their precision is superior to that of traditional models (based on the evolution of the financial situation).

Therefore, broadening the prediction perspective is not a simple and easy task. The subsequent studies show that the transformation of dynamic forecasting methods, the inclusion of qualitative variables, and the transformation of traditional variables will participate both in increasing the degree of precision of the forecasting models as well as than the extension of the forecast horizon. Yet there are several researches that have tried to directly answer the question the extension of the forecast horizon. The results of these studies showed that improving the quality of accuracy of failure prediction over longer periods should be coupled with three factors: the type of industry, the economic cycle, and identification of bankruptcy paths.

4. Towards New Innovative Forecasting Models

Several researchers have focused on the development of innovative models of prediction of the probability of financial failure of companies, this, through the use of modeling techniques, namely: logistic regression, regression simple, discriminant analysis, artificial intelligence techniques, in particular: neural networks, a support vector machine (SVM), decision trees … in order to develop models innovative, more efficient and which deliver great precision. The majority of studies that have been conducted on predicting financial failure are based on the choice and selection of financial variables (financial ratios: which do not contain environmental factors that are both microeconomic and macroeconomic), yet the inclusion of qualitative information such as the atmosphere economy has been the subject of active debate.

Therefore, using only quantitative (financial) variables can be insufficient given that this information is interested in the past of the company and neglects all factor likely to influence the future of the company. Completed the financial variables by non-financial variables is almost essential to the construction of a model of powerful prediction. The absence of analysis mechanisms to obtain and process qualitative information represents the main pitfall for the use of these variables. However, with the development big data analysis tools such as text mining techniques (text-mining) have attracted the attention of many academic researchers and professionals of business.

It is essential to apply big data analysis techniques technical), various forecasting issues including the assessment of the risk of default of payment. Innovation in failure prediction modeling is possible thanks to two essential elements: the nature of the variables and the modeling tool. The techniques of artificial intelligence are of crucial importance in the financial field, the tasks are carried out with almost no irregularities and in a qualitative manner. Analytical methods are necessary to process the qualitative information presented as unstructured text due to management complexity. Innovation and performance reside in the way in which information is transformed from their qualitative aspect to a new ‘quantitative’ aspect which can be incorporated into the model bankruptcy prediction, (Roussi, 2022).

3. CONCLUSION

This research study represents a review of the literature around the subject of forecasting the financial failure of Kenyan companies, highlighted the importance of selection of variables in the process of developing relevant models of the forecast. The majority of studies that have been carried out in Kenya have focused on models’ traditional methods based on independent financial forecast variables failure. However, these variables are widely criticized by two things, first, the representation of past information and therefore the neglect of all information that could impact the future of the company, secondly, the credibility of the information presented to decision makers.

These two observations legitimize the use of non-financial information, in particular the qualitative variables that demonstrated the predictive power of the failure financial, especially on the "accuracy" aspect and on the "temporal" aspect (extension of the forecast horizon: if the models based on quantitative variables deliver a forecast horizon limited to one year, the models combining non-financial data with those financial institutions are able to deliver a projection over a longer horizon).

Finally, if traditional forecasting techniques offer a limited vision in the time and with a lower degree of accuracy, new forecasting techniques in particular artificial intelligence techniques, machine learning techniques (data- mining, text-mining…) participate in the design of new innovative models adapted to the Kenyan economy and which are more efficient. This work also has managerial and scientific implications, firstly the decision-makers will find in our article a practical contribution on the variables that must be taken into consideration to develop new forecasting models that are more accurate and more performing. Then, on the scientific level, this work contributes to the deepening of knowledge on the theme of failure prediction, by presenting new avenues modeling of the studied phenomenon.

This work is located upstream of a future empirical study that will complete the present

theoretical contribution. This is explained first of all by the desire to understand, to know and identify the qualitative variables to be used in predicting financial failure, as well as to present the usefulness and the power of these variables in the improvement of the existing systems. As a perspective of this project, the realization of an empirical study must verify control of qualitative variables in predicting the financial failure of Kenyan SMEs.

REFERENCES

- Adams, R. B., & Ferreira, D. (2007). A theory of friendly boards. *Journal of Finance*, 62 (1), 217-250.
- Altman, D. G., & Royston, P. (2006). The cost of dichotomizing continuous variables. *Bmj*, 332(7549), 1080.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23, 589-609.
- Altman, E. I. (1983). Corporate Financial Distress: A Complete Guide to Predicting, Avoiding, and Dealing with Bankruptcy. Hoboken: Wiley Inter-science, John Wiley, and Sons.
- Balcaen, S., Ooghe, H. (2006). 35 years of studies on business failure: an overview of the classic statistical methodologies and their related problems. *The British Accounting Review*, 38(1), 63-93.
- Blazy, R., Charlety, P., & Combier, J. (1993). Business failures: difficulties visible several years in advance. *Economics and Statistics*, 268(1), 101-111.
- Boardman, C. M., & McEnally, R. W. (1981). Factors affecting seasoned corporate bond prices. *Journal of Financial and Quantitative Analysis*, 16(2), 207-226.
- Chava, S., & Jarrow, R. A. (2004). Bankruptcy prediction with industry effects. *Review of Finance*, 8, 537-569.
- Descreumaux, A. (1998). organization theories, editions management society EMS, Caen.
- Du Jardin, P. (2015). Bankruptcy prediction using terminal failure processes. *European Journal of Operational Research*, 242 (1), 286-303.
- Du Jardin, P. (2015). Bankruptcy prediction using terminal failure processes. *European Journal of Operational Research*, 242(1), 286-303.
- Du Jardin, P., & Severin, E. (2012). Forecasting financial failure using a Kohonen map: a comparative study to improve model stability over time. *European Journal of Operational Research*, 221, 378-396.
- Elakry, E., & Elkodi, A. (2019). Early prevention of companies in a situation of financial distress. *Finance and international finance review*, 15, 1-19.
- Gaur, S. S., Bathula, H., & Singh, D. (2015). Ownership concentration, board characteristics and firm performance: A contingency framework. *Management Decision*, 53(5), 911-931.
- Gepp, A., & Kumar, K. (2008). The role of survival analysis in financial distress prediction. *International Research Journal of Finance and Economics*, 16, 13–16-34.
- Hawawini, G., Subramanian, V., & Verdin, P. (2003). Is performance driven by industry - or firm-specific factors? A new look at the evidence. *Strategic Management Journal*, 24(1), 1-16.
- Hillegeist, S. A., Keating, E. K., Cram, D. P., & Lundstedt, K. G. (2004). Assessing the probability of bankruptcy. *Review of Accounting Studies*, 9, 5-34.
- Hssainate, M. (2016). Prevention of business failure. *Moroccan magazine of research in management and marketing*, 14, 298-321.
- Hubert, J., & André, T. (1994). Empirical studies - Life and death of businesses. Reflections on the dynamics of tissue renewal economics. *Revue d'Économie Industrielle, Program National Persée*, 69(1), 75-91.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3, 305-360.
- Keasey, K., & Watson, R. (1987). Non-financial symptoms and the prediction of small company failure: a test of Argenti's hypotheses. *Journal of Business Finance & Accounting*, 14(3), 335- 354.
- Kherrazi, S., & Ahsina, K. (2016). Modeling and analysis of failures companies: application to Moroccan SMEs. *Finance and finance review International*, 1, 1-17.
- Laitinen, E. K. (2005). Survival Analysis and Financial Distress Prediction: Finnish Evidence. *Review of Accounting and Finance*, 4(4), 76-90.
- Myoung-Jong, K., & Ingoo, H. (2003). The discovery of experts' decision rules from qualitative bankruptcy data using genetic algorithms. *Expert Systems with Applications*, 25, 637-646.
- Nokairi, W. (2016). The risk of failure of Moroccan companies: characteristics and prediction, National doctoral thesis in management sciences. *Hassan II University, Faculty of Economic and Social Legal Sciences*, Casablanca.
- Reisz, A. S., & Perlich, C. (2007). A market-based framework for bankruptcy prediction. *Journal of financial stability*, *3*(2), 85-131.
- Roussi, K. (2022). Artificial Intelligence at the service of the profession of chartered accountant. *International Review of the Researcher*, 3(2), 155-177.
- Smith, M., & Liou, D. K. (2007). Industrial sector and financial distress. *Managerial Auditing Journal.*
- Yi-Chung, H, (2009). Bankruptcy prediction using ELECTRE-based single-layer perceptron. *Journal of Neuro computing*, 72(13-15), 3150-3157.