

“Technological perspectives of a balanced scorecard for business incubators: Evidence from South Africa”

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TECHNOLOGICAL PERSPECTIVES OF A BALANCED SCORECARD FOR BUSINESS INCUBATORS: EVIDENCE FROM SOUTH AFRICA

Abstract

This study was deemed relevant in the current epoch given the need for rebuilding enterprises that were devastated by the Covid-19 pandemic. To ensure economic restoration, particular interest in small business start-ups and incubators has become especially important. In addition, measurements for effectiveness are critical since, without them, progress cannot be ascertained. The aim of this study was to assess the balanced scorecard and its applicability to business incubators in the context of the present technological explosion. Specifically, the study assessed the technological dimension of the balanced scorecard with the particular intention of establishing how technological tools affect the balanced scorecard. The study was based on phenomenological interviews to provide data that were relevant to the study objectives. A thematic analysis of the data collected supported literature perspectives that technological tools and platforms such as social media, robotics, expert systems, online as well as web platforms strengthen and improve the measurement of both financial and non-financial criteria for measurement on the balanced scorecard. Technological tools were found to improve data collection, management, and analytics thereby improving the quality and credibility of balanced scorecard measurement. The study recommends the accelerated adoption of technological tools for use within the balanced scorecard among incubators. It also recommends that the government should support incubators in their technological adoption measures as this has the potential of increasing economic development.

Keywords

entrepreneurship, information technology, balanced scorecard, measurements, effectiveness

JEL Classification

O43, H53, M38, E26, I38

INTRODUCTION

Despite widespread discussion of the effectiveness of business incubators and how their performances can be evaluated and measured, there are no particular standards for general use (Al-Mubarak & Schrod, 2011, p. 435). The measurements remain disjointed and uncoordinated. In addition, financial measures have been more prevalent in the measurement of business incubator performance than non-financial measures (Sedita et al., 2019, p. 441). This prevents a comprehensive appreciation of business incubation to improve the socio-economic imperatives of South Africa. In consideration of the above, a study on the adoption of the balanced scorecard approach to the measurement of the effectiveness of business incubators has been considered (Shehada et al., 2020). With the Fourth Industrial Revolution (4IR) gaining momentum across all business issues, the study of technological dimensions of the balanced scorecard has become a new research frontier. South Africa is currently faced with a need for policy research on the implications of the 4IR technology discourse on key socio-eco-

conomic imperatives of the nation such as unemployment, poverty, business incubation, and national growth (Gastrow, 2020). In support of this view, Bongomin et al. (2020, p. 1) commented that many countries across the globe are involved in the technological war and no country wants to be left out. The Covid-19-induced collapse of many small enterprises, as well as the increase in online businesses as part of adaptive responses to the Covid-19. It has made it essential to consider which measures for business success have become essential and how technology seems to mediate their use.

This study is based on the view that technology has become a key tool for strategic management in the same way that the balanced scorecard is also critical for strategic management (Bochenek, 2019, p. 7). The interaction between these important strategic forces seems critical. The disruptions and complications in the business environment that are arising from the Covid-19 pandemic as well as the 4IR have changed the landscape for business incubation. In support of the strategic role of the balanced scorecard, Hamdy (2018, p. 424) argues that the balanced scorecard is essential for creating a competitive advantage.

1. LITERATURE REVIEW

Traditionally, measurement of performance was considered mainly as a primarily financial task and the financial measures dominated business measurements (Shehada et al., 2020, p. 67). Kaplan and Norton's (1992) treatise on the need to broaden measurements for business success culminated in the balanced scorecard, which became an important strategic management tool for developing competitive advantage (Bochenek, 2019, p. 6; Benkova et al., 2020, p. 4; Hamdy, 2018, p. 424). It involves the translation of business vision and mission into measurable financial and non-financial objectives. The balanced scorecard is based on four perspectives for consideration in the measurement of business outcomes, namely: financial, customer, internal business processes and learning, and growth perspectives (Hamdy, 2018, p. 425; Benkova et al., 2020, p. 4). With the high failure rate of small businesses in South Africa and many other emerging economies, and in the consideration of the importance of small businesses in the economy, strategic management tools for small businesses are critical. To accelerate small business development, the incubation phenomenon has emerged as a way of nurturing and nursing emerging businesses so that they can effectively start up and survive. The concept of business incubation reportedly emerged in the United States of America (USA) as part of the Batavia Industrial Centre in New York that was established by Joseph Mancuso in 1959 (Hewitt & van Rensburg, 2020, p. 292). Since then, the concept has been considered by many nationalities as a viable route for ad-

vancing small business development (Lose et al., 2020, p. 2). In South Africa, business incubation arose from the formation of the Small Business Development Corporation (SBDC) in 1995 (Buys & Mbewana, 2007, p. 357). Since then, the concept has received significant consideration especially within the ambit of the Small Development Enterprise (SEDA), which is tasked to oversee small business development in South Africa.

Regarding the importance of business incubators, this study was formulated to enquire into the technological dimensions of the balanced scorecard for business incubators. Business incubators tend to have many notable financial and non-financial imperatives that can be considered to assess their success. They are known to provide financial, technical, and administrative support for small business start-ups (Shehada et al., 2020, p. 67). In the South African context, a country with high inequalities between the rich and the poor, business incubation has been considered a critical way of addressing the racial wealth differences that epitomizes the apartheid era (Hewitt & van Rensburg, 2020, p. 296). The need to grow the economy and address socio-economic vulnerabilities associated with high unemployment has meant the need for a strong focus on business incubators in South Africa (Lose et al., 2020). The Covid-19 pandemic has threatened to strengthen South African developmental challenges and there is a need to determine relevant ways to strengthen small business incubation once again. In the view of Guillen (2020), the pandemic is a crisis that requires both short-term and long-term foresight and calls for holistic strat-

egies for business survival. According to Lose et al. (2020), it was found that technology adoption has become essential for remodeling business incubation and increasing competitiveness. The business scorecard as a tool for measuring the performance of organizations can be considered as a vital tool assessing and promoting the viability of organizations. Measurements provide necessary insights into the past, present, and future of organizations. Advancements in technology are likely to have some impact on the nature and form of measurements. The 4IR is associated with significant technological use and the adoption of technological infrastructure and platforms such as artificial intelligence technologies, cloud computing, robotics, information communication technologies as well as web-based data management platforms.

Benkova et al. (2020, p. 6) asserted that the way business incubators use the balanced scorecard has largely been affected by the focus of the incubator with some incubators relying on financial measures more than non-financial measures to measure their performances. The Small Enterprise Development Agency (SEDA, 2016) provided that the measures for the performance of small business incubators include the number of small businesses established, number of clients in the pre-incubation program, number of clients in incubation program, number of clients supported, percentage of SMMEs that survived the 1st year, percentage of SMMEs that survived the 2nd year, percentage of SMMEs that have access to incubator infrastructure and technology, raising funds for small businesses, new foreign clients with whom the business has been secured, and many other criteria (Lose et al., 2020; Lose, 2021). Within this multiplicity of performance measures, this study was formulated to assess the significance of technological tools in strengthening the balanced scorecard for the assessment of incubator effectiveness.

Considering the literature review, this study aimed to assess the balanced scorecard and its applicability to small business incubators with specific reference to the technological context that is characterizing the business environment today. Specifically, the objectives of the study were: (1) to explore the impact of information technologies on the balanced scorecard approach to business incubators in South Africa, (2) to determine the linkages among tech-

nological factors and components of the balanced scorecard in the measurement of business incubation in South Africa.

2. METHODS

The study was based on the need to collect in-depth data on the implications of technology on the balanced scorecard. As such, a qualitative approach, which allows for the collection of contextually relevant in-depth data, was chosen. The methodology adopted for the study was consistent with the constructivist or interpretative paradigm, which is qualitative and allows for detailed interaction with respondents to collect qualitative data. The study was also based on the collection of the experiences of incubators from eight (8) centers of incubation across the Western Cape and the Eastern Cape provinces of South Africa. In line with these fundamental positions of the study, phenomenological interviews were conducted to collect data. Phenomenological interviews tend to support the view that the lived experiences of incubators in South Africa form a critical archive of knowledge to understand problems that incubators face (Yuksel & Yildirim, 2015, p. 1). Interviews remain a central mode of data gathering in qualitative research (Asoba, 2014, p. 57). They are a direct form of gathering data through real-time questioning and answering (Zikmund et al., 2010, p. 150). The methods of convenience and purposive sampling were used in the selection of participants to interview. Emails were sent out to incubators from the Eastern Cape and Western Cape provinces in South Africa. Eight (8) incubators agreed to participate in the study and telephonic interviews were conducted. These interviews were audio-recorded and later transcribed and subjected to thematic analysis.

During the analysis, the data set is read to understand nature and key elements of the contents of the data. Data sensitivity is also a critical component of the analysis as explained by Glaser and Strauss (1967) in the grounded theory. The analysis also conformed to the concepts of constant comparison, theoretical sampling, and purposive sampling in the analysis of text and the creation of codes, categories, and themes. The analysis was further conducted following the iterative tradition of qualitative data analysis, which involves cod-

ing, re-coding, and refinement until some form of code agreement and saturation is achieved (Kolb, 2012, p. 9; Leech & Onwuegbuzie, 2007, p. 34).

3. RESULTS

Expects of the interviews were sampled out purposively to address the study objectives. These excerpts were reduced to sub-categories and categories from which a theme emerged. Table 1 is a presentation of excerpts from the interviews, the subcategories, categories, and themes created from it.

Following the analysis, as shown in Table 1, it was found that technological tools have become a key component of the balanced scorecard as they allow for the collection of both financial and non-financial data. The evidence from the data suggests that technology allows increased interaction within and outside the organization, therefore, increasing the data available for evaluation and analysis. These findings echo those of Brathwaite (2019), who found that the increased use of information technology facilitated more interaction among a large number of business stakeholders thereby making it possible to assess the success of a business broadly. Furthermore, the data showed that

Table 1. Excerpts from the interviews and codes

Excerpts from in-depth interviews	Sub-categories	Categories	Theme
"...technological facilities make it possible to collect data from various non-financial facilities and allow the analysis of such data. Through social media and from online databases a lot of non-financial information can be collected."	Technology increases interaction	Technology-aided information collection	Centrality to measurements
"...provision of tools for interpreting, measuring, and analyzing relevant measurement issues."	Social media and online platforms for data collection	Technology-aided analysis and interpretation of effectiveness criteria	
"...business financial and non-financial knowledge is crucial as it is the biggest influencer of incubator performance..."	Technology-aided measurement		
"...possession of traits such as being self-driven, self-directed, and willing to learn from experts' collaboration, sourcing finance, expertise, and infrastructure advertising."	More efficient measurement		
"Technologies allow for comparative interpretation of incubation performance across regions and nationalities."	Technology facilitates comparative measurements, ranking, and positioning	Situational/ environmental interpretation	Internal assessments
"...technology allows for interlinks with other BRICS countries and allows stronger comparative-based analysis methods. Incubation program in South Africa is less popular when compared to other countries in BRICS."	Analysis of business environment	Identification of incubation opportunity	
"Technology increases the spread of measurement criteria. Most SMEs are not aware of incubation program support. The reason is that most of the community members are not entrepreneurs and prefer being employed then starting their own business." "...incubation program needs to be centrally administered and controlled."	Broaden the measurements		
"In our area, we visit the community and make presentations of our services. Technology allows reaching clients faster and also incubating online. Thereafter, people use of services and offerings."	Technology-aided marketing, outreach strategy, small business selection criteria, and other performance criteria	Network building	External interaction
"Technology promotes collaborative goal setting and dialogue-based formulation of strategies, policies, organization and culture, relationship contracts and arrangements, business processes, roles, tools, systems, objectives and measures and incentives, incubate induction strategy and policy, incubator operational support strategy and policy, incubate exit strategy and policy, incubate post-exit support, financial support, subject matter experts, infrastructure, relevant markets, scarce skills plan, financial stability, good governance, funding, meeting the incubates expectation."		Incubation strategy	
"...offering a one-stop-shop, which is training, business development support, and funding under one roof..."			

Table 1 (cont.). Excerpts from the interviews and codes

Excerpts from in-depth interviews	Sub-categories	Categories	Theme
“Technology tends to broaden and strengthen the measurement of the impact of our business incubation programs through big data and measurement of the number of sustainable businesses that graduate successfully, the number of jobs created, increase in income generated, and improvement in the standard of living of the community members.”	Success essentials	Measurement of outputs	Enhanced credibility of measurements
“Technology promotes surveys, sales records, and jobs created processing.”	Accountability		
“...allows for post-measurement tracking of incubates. Information flows continuously.”	Follow-ups		
“Mentor feedback, monitoring of KPI's like turnover and employment, achievement of milestones in learning program, growth in personal entrepreneurial competencies is often facilitated by technology.”			

increased use of technological systems of measuring the success of business incubators has the potential of increasing collaborative and dialogue-based approaches, which increase credibility as well as the strength of measurements (Lose et al., 2020). As shown in Table 1, it was found that technological tools tend to benefit both from internal and external measurement systems. An analysis of the links among the codes and a context-based assessment of the themes established using Atlas.ti led to the development of the network diagram that is shown in Figure 1.

4. DISCUSSION

The interviews conducted in this study have echoed sentiments that the current business environment is being strongly shaped by technology.

Respondents pointed out the use of artificial intelligence tools, data mining electronic tools, robots, expert systems as well as other web-based measurement and analytics techniques. Evidence collected indicate that these technological systems have become central to balanced scorecard financial and non-financial measures. They broaden the volume and scope of data, aid the whole measurement system and increase efficiency in the collection, processing, and interpretation of measures. The early work of Lusk et al. (2006) on the inadequacies of the balanced scorecard posited that the use of the internet and other electronic systems has meant that the balanced scorecard needed reconsideration. The present study seems to suggest that technological tools have actually had a positive impact in strengthening the role of the balances scorecard among the business incubators interacted. In the same way,

Source: Authors' output.

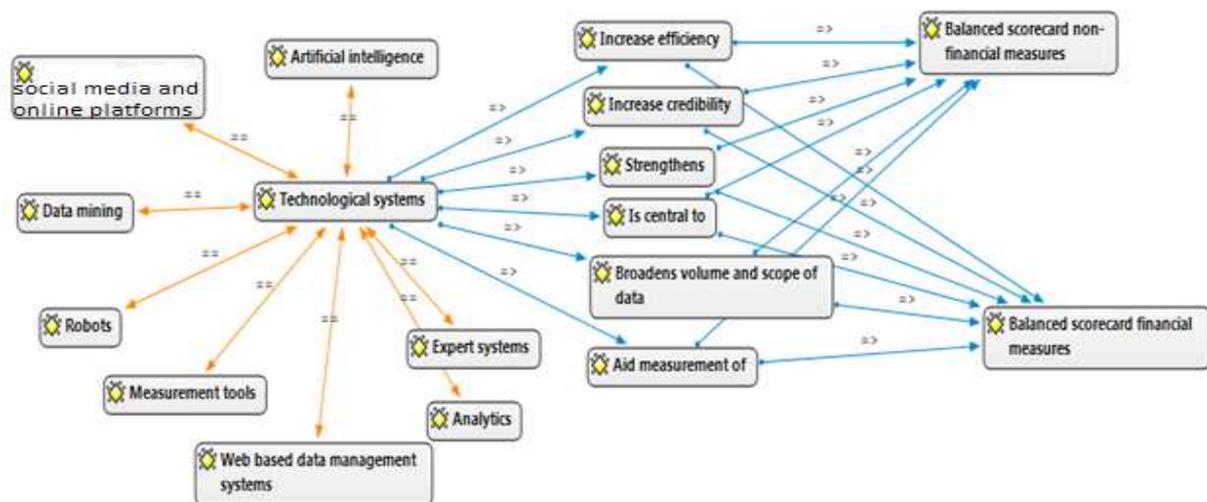


Figure 1. Network diagram for technological perspectives of the balanced scorecard

Madsen and Stenheim (2014) conducted a study of the problems associated with the use of the balanced scorecard and found that organizations face serious challenges in data gathering as well as in automating elements of the balanced scorecard. With the recent observation that the 4IR is actually leading to translations to a new operational order that is heavily reliant on technology, organizations, including business incubators, are increasingly adopting technologies. This study demonstrates that many business incubators have found the technological landscape as an enhancer of the effective use and application of the balanced scorecard. Technological systems have been found to facilitate data collection as well as aid the analysis of the data.

CONCLUSION

The study aimed to assess the balanced scorecard and its applicability to business incubators in the context of the present technological explosion. The results of the study pointed to a strong case for technology-aided use of measures on the balanced scorecard. It was found that the effective utilization of balanced scorecard criteria for the measurement of incubator output and evaluation is now technology-driven. The study demonstrated that the use of technologies in analytics, data mining, and collection enhances the proper use of both financial and non-financial components of the balanced scorecard. The study basically found evidence for the adoption and use of 4IR technologies to collect, analyze, and interpret business incubator information in the South African context. In particular, communication technologies support strong interaction among various enterprise stakeholders thereby strengthening the measurement of non-financial dimensions of the balanced scorecard. Following the results of this study, business incubators are recommended to adopt technologies and make technological tools central to the effective use of the balanced scorecard as a tool for the assessment of effectiveness and the measurement of key operational criteria. The government is also recommended to avail mechanisms to support technology adoption among incubators to promote their vibrancy, which is likely to translate to more entrepreneurial activities. Future research should focus on the actual critical balanced scorecard measures for measuring incubation in the South African context.

AUTHOR CONTRIBUTIONS

Conceptualization: Thobekani Lose, Sebenzile Khuzwayo.

Data curation: Thobekani Lose, Sebenzile Khuzwayo.

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Investigation: Thobekani Lose, Sebenzile Khuzwayo.

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Writing – review & editing: Thobekani Lose, Sebenzile Khuzwayo.

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