LEAN STARTUP AND ITS APPLICATION IN BUSINESS AND OPERATIONS STRATEGY IN SOUTH AFRICA

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ABSTRACT

Lean startup is a relatively new concept initially developed to help startups grow their business in a more effective and scientific way. This methodology uses data to help inform decisions such as entering new markets in a fast-changing business environment with several uncertainties. The methodology contrasts with the traditional approach by supporting experimentation over preconceived assumptions and iterative development over linear methods to evaluate new business ventures.

This study evaluates the extent to which lean startup principles have been applied across industry in South Africa and how these have been used in conjunction with the corporate and operations strategy. While Lean startup methodology has been applied in other parts of the world, its applicability and extent of application within the South African context is not evident. Prevalence of Lean startup methodology is the desirable state whereas paucity would be a concern.

The results of the study show that a number of participants used the methodology to help develop the business and operations strategy. Participants also typically saw value in the concepts for application across industry as long as the right structures are in place to help support the initiative.

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1. INTRODUCTION

1.1 Background

Traditionally, the role of business strategy, among other things, is to help mitigate risk by having a clear roadmap for the company. Companies typically spend time and effort developing financial models to forecast the impact of the strategy and to have a strategy that is as robust as possible. Using the traditional approach, a business project typically undergoes in-depth research and analysis to back-up the idea it is using. While there is merit in the traditional approach that has been tried and tested over decades, the world has changed. Today with much lower barriers to entry, competitors are able to bring products to market quicker, hence execution is taking place alongside strategy [1]. Businesses need to be able to test ideas first hand with actual customers before building scaled end products, and in so doing businesses can establish early in the process if they should pursue the idea in question, change it, or abandon it. In building the strategy alongside the execution (i.e. building the product), the risk of failure can be greatly reduced. Similarly, when looked at from an operations perspective, having a well-developed strategy helps to reduce the risk of failure or production changes which in turn can mean massive cost implications.

One can find many examples of companies in Silicon Valley that have risen from garage based startups to literally the biggest corporations in the world, all in a relatively short space of time. During this time other organisations have not done as well and in certain circumstances, had to close. Many of these Silicon Valley startups were built using an iterative process that allowed the organisation to design their strategy while validating the assumptions in parallel. This methodology known as the “lean startup” methodology encourages experimentation rather than detailed planning, customer feedback in place of assumptions and iterative development in place of scaled up development [2].

While the lean startup methodology has been implemented by many startups across the world, the level of research in academia has been limited. Further, while the lean startup method has been implemented and documented in “First World” countries, very little published research was found showing its applicability in the South African context.

Thus, this research attempts to determine the extent to which the lean startup methodology has been applied in selected firms in South Africa, as well as understand the extent in which the lean startup methodology would assist in informing the development of the operations strategy by gathering actual customer data to inform the implementation of the business strategy.

This paper has the following objectives:

1. To establish the extent to which the lean startup concepts have been applied in selected South African firms.
2. To determine which of the lean startup concepts were applied.
3. To establish whether the lean startup concepts have been applied with the intention of helping develop the business and operations strategy through the top-down development approach.
4. To determine what the success or failures were in implementing the lean startup concepts.

The proposition is that South African companies will typically be aware of using concepts like agile for systems development but will typically not have applied lean startup concepts, especially in a strategy function.

2. LITERATURE REVIEW

The literature review aims to provide perspective on both business strategy and the lean startup methodology as these two areas of knowledge are fundamental to the research.

2.1 Strategy

Various academics have defined strategy over the years, for example defines strategy as, “the direction and scope of an organisation over the long term: which achieves advantage for the organisation through its configuration of resources within a changing environment, to meet the needs of markets and to fulfil stakeholder expectations” [3]. On the other hand, Porter [4] defined strategy at a high level as, “The essence of strategy is choosing to perform activities differently than rivals do”. Witt and Meyer [5], defined strategy based on earlier
works by Porter [6] as, “The search for a favourable competitive position in an industry, the fundamental arena in which competition occurs. Competitive strategy aims to establish a profitable and sustainable position against the forces that determine industry competition”.

A universal definition of business strategy has been elusive. While strategy has been defined differently over time, Hax and Majluf [7], collated the various definitions in a unified study that summarises strategy as, “a multidimensional concept that embraces all the critical activities of the firm, providing it with a sense of unity, direction, and purpose, as well as facilitating the necessary changes induced by its environment.” For this research the definition from Hax and Majluf [7] will be used as it incorporates aspects of the other definitions.

While the definition of business strategy is varied, the way in which strategy is developed also has various interpretations. This has led to different schools of thought on how a strategy is achieved. Because of the different interpretations of strategy development, two schools of thought have emerged namely, prescriptive and emergent strategy [8]. These schools of thought have differing views on the three core areas of strategy which are analysis, strategic development and implementation [9]. In the prescriptive school of thought the three areas are done in a sequential way, where in the emergent school of thought the three areas are interrelated and there is no clear distinction between development and implementation [8]. This study adopts the position of the prescriptive school of thought of strategy development.

Bradley et al. [10] provides an example of a strategy development framework shown in Figure 1 below. One key factor to note from this framework is that the feedback loop is only included at the end of the process and not at each step of the process as described in the customer development process [11].

![Figure 1: Strategy Building Blocks](image)

2.2 The Lean Startup

The advent of the Lean Startup movement is attributed to Blank [11] who introduced the concept of customer development where the customer was involved from the initiation of the idea. Through this process the feedback from the customer is used to ensure that the final product is in line with what customers want. Blank [11], contrasts the differences between the traditional product development as shown Figure 2 below, with the newer customer development cycle as shown in Figure 3 below.

![Figure 2: The Product Development Diagram (traditional method)](image)
Due to the iterative nature of the cycle, shown in Figure 3, the concept of “Customer development”, helps to manage risks by involving customers throughout the process. A key to this process is the fact that it is iterative and not linear as in the traditional product development process.

![Figure 3: The Customer Development Cycle](image)

Table 1: Key lean startup principles [13]

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurs are everywhere</td>
<td>Using Ries’s definition of entrepreneurship, the applicability of these concepts can be to anyone working in any organisation, big or small.</td>
</tr>
<tr>
<td>Entrepreneurship management</td>
<td>Since a startup is an organisation, the associated processes need to be appropriate for the environment with extreme uncertainty.</td>
</tr>
<tr>
<td>Validated Learning</td>
<td>Validation of the startup experiments should be run. The results of which can be used to iterate on the vision and idea.</td>
</tr>
<tr>
<td>Build-Measure-Learn</td>
<td>Fundamental to the process is to get the product to market, test it with customers and then use this feedback to determine whether to pivot or persevere.</td>
</tr>
<tr>
<td>Innovation accounting</td>
<td>To get a successful outcome, the process needs to be closely measured. This includes setting KPI’s and holding people accountable to deliver.</td>
</tr>
</tbody>
</table>

The lean startup methodology helps new ventures develop products that customers want, far quicker and cheaper than traditional methods [14], the cost of getting a product to market has decreased drastically. Although the lean startup concepts were initially designed for startups, these concepts can be extended to an established organisation as well. Ries [13] expands the concepts of entrepreneurship and Lean Startup to not only include startups but to expand the concepts to include all organisations building or launching a new product in environments of extreme uncertainty.
2.3 Conclusion

A theoretical framework is developed by incorporating the lean startup methodology as defined by Ries [13]. The framework is illustrated in Figure 4 below. One of the research objectives is to establish the relationship between the lean startup methodology and business strategy. The theoretical framework will be useful for investigating this relationship. The relationship is shown in the theoretical framework by illustrating the lean startup method as a link between the business and operations strategy. Each of the pillars is then broken down into key concepts that are integral to the lean startup method. The four pillars and these concepts are adapted from the key principles as developed by Ries [13].

![Figure 4: Theoretical Framework](image)

Having reviewed the relevant literature and developing the theoretical framework to guide this study, the chapters that follow will look at how data was collected, what information was obtained and how it was interpreted, leading to the findings of this study. The next chapter explains the methodology used to collect the data.

3. METHODOLOGY

3.1 Research Approach

A qualitative research approach was used. A number of qualitative methods were considered for this exploratory study [16] and it was decided that interviews would be used as it allows for interpersonal contact which enables one to probe issues deeper and follow on certain responses from the interviewee. This is useful in evaluating the way in which strategy development changes and how these changes affect the implementation. This method also allows for one to obtain a large amount of information in a relatively short space of time which is ideal due to the tight time constraints of this research.

The interviews could be conducted in a number of different ways [17], however, for the purposes of this study the semi structured interview was considered to be the most suitable. Due to the exploratory nature of this research, semi-structured interviews help to keep the questions consistent while at the same time being able to extract extra information over and above what the questions directly asked. An interview guide was developed before the actual interviews are conducted. Some of the questions were open ended to allow for participants to express their views adequately with the interview guide ensuring that the conversion is kept on topic. The interviews were recorded and later transcribed and coded. The coding process allowed the data collected to be segmented into various themes which are then analyzed [18].
3.2 Analysis of Data

Once the data were collected and transcribed, the data were coded to identify themes in line with the theoretical framework. Leedy and Omron [19] have developed a step wise method to ensure reliability of the analysis. This includes applying the initial coding to a sample of the data to test if the codes developed can capture all the insights from the data. This process would help inform the final code list thus ensuring both validity and reliability of the coding. Another important way to ensure reliability is to use direct quotes for each code in order to improve the reliability of the analysis [19].

The analysis has been adapted from the multiple case study analysis methodology developed by Yin [20]. Each individual project that the participant discusses is tested against the theoretical framework to identify the extent of application. The interview was split into two sections. The first portion of the interview was used to determine the participant’s understanding of lean startup as a concept. The second portion of the interview was where the participants discussed the project examples. Each project was individually analyzed against the theoretical framework to understand the extent to which the methodology has been applied. This process was adapted from the “within” case study analysis [20]. The projects were then analyzed together to determine if there were any themes that could be identified across the various projects.

4. RESULTS

A total of nine interviews were scheduled but only eight interviews were eventually conducted. The participants all had some type of consulting experience but with various backgrounds. While all the participants had strategy and consulting experience, majority of the participants had experience in international consultancies, followed by niche consultancies and only one participant being in an internal strategy role. The profiles of the various people interviewed is summarised in Table 2. The participants were all senior management or partners in their respective roles.

Table 2: Interviewee Profile Information

<table>
<thead>
<tr>
<th>Coded Name of Participant</th>
<th>Role</th>
<th>Industry Focus</th>
<th>Years of Experience</th>
<th>Areas worked in</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Internal Strategy</td>
<td>Telecoms</td>
<td>7 Years</td>
<td>South Africa, Rest of Africa</td>
</tr>
<tr>
<td>B</td>
<td>International Consultancy</td>
<td>Financial Services</td>
<td>16 Years</td>
<td>Europe, Brazil, SA</td>
</tr>
<tr>
<td>C</td>
<td>International Consultancy</td>
<td>Financial Services</td>
<td>23 Years</td>
<td>Europe, USA, SA</td>
</tr>
<tr>
<td>D</td>
<td>International Consultancy</td>
<td>Financial Services Retail</td>
<td>20 Years</td>
<td>SA, Rest of Africa</td>
</tr>
<tr>
<td>E</td>
<td>Niche Consultancy</td>
<td>Across Industry</td>
<td>20 Years</td>
<td>SA</td>
</tr>
<tr>
<td>F</td>
<td>Niche Consultancy</td>
<td>Mining, Telecoms, Financial Services</td>
<td>20 Years</td>
<td>SA</td>
</tr>
<tr>
<td>G</td>
<td>International Consultancy</td>
<td>Financial Services Telecoms Rail &amp; Freight</td>
<td>10 Years</td>
<td>SA, Middle East</td>
</tr>
<tr>
<td>H</td>
<td>International Consultancy</td>
<td>Financial Services</td>
<td>20 Years</td>
<td>Europe, SA</td>
</tr>
</tbody>
</table>

By asking each of the participants to explain their understanding of lean startup, the understanding of the concepts were assessed. This question was also used as an indicator to understand the extent to which the concepts were applied.

Figure 5 below shows the number of people that knew compared to those that didn’t know what the concept meant. A specific question was asked on the interpretation and understanding of lean startup. The question was asked upfront without too much of an explanation to get a non-biased view of the concepts.
The second portion of the interview was focused on the interviewee talking through various projects that they were involved in. In total participants walked through eighteen projects across the eight interviews. It must be noted that due to the interviews being semi-structured, this portion was driven by the interviewee with the interviewer probing only when needed.

The tables below are summaries of the detailed analysis that was done for each project. Table 3 below shows how each project scored against the 4 elements of the theoretical framework. The scoring was based on a qualitative assessment of the application of the concept against what was defined in the literature. The scoring using the 3-point approach where “1” meant the concept was not applied, “2” meant the concept was applied partially and “3” meant the concept was applied in totality.

### Table 3: Project Scoring Summary

<table>
<thead>
<tr>
<th>Project</th>
<th>Description of project type</th>
<th>Validated Learning</th>
<th>Innovation Accounting</th>
<th>Build Measure Learn</th>
<th>Strategy Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>Operating Model Change</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Project 2</td>
<td>Video Streaming</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Project 3</td>
<td>Base stations</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Project 4</td>
<td>Global Commercial Bank</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Project 5</td>
<td>Grow Financial Services</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Project 6</td>
<td>Automotive Reorganisation</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Project 7</td>
<td>Automotive Car Launch</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Project 8</td>
<td>New Channel Launch</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Project 9</td>
<td>Retail Business</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Project 10</td>
<td>Bank</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
From the results, a small proportion of the projects applied the concepts in full, with majority of the projects applying the concept partially or not at all.

Each project from the various participants was analysed to determine the extent to which the lean startup methodology and its various components were applied. Figure 6 below shows the extent of the application of the various lean startup concepts. From the chart, the application of the concepts varied with innovation accounting being the least used concept as it was not used at all in 67% of the projects, followed by strategy applicability which was not used in 50%, validated learning which was not used in 39% and build measure learn which was not used in 33% of the projects.

![Figure 6: The extent of the concepts applied across the project studies](image)

Validated learning, innovation accounting and build measure learn were all applied fully in 6% of the projects with strategy applicability applied in 22% of projects. Build measure learn and validated learning were the concepts most frequently applied partially, being applied 61% and 56% respectively. Innovation accounting and strategy applicability were both found to be applied partially in 28% of the projects.

A scoring model was then set up for all projects where the concepts that were either partially or full applied were counted. Using this model, a heat map of the various concepts was identified as shown in Table 4: Heat Map of the Concepts per industry for the selected firms.
Table 4: Heat Map of the Concepts per industry for the selected firms

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Projects</th>
<th>Validated Learning</th>
<th>Innovation Accounting</th>
<th>Build Measure Learn</th>
<th>Strategy Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Services</td>
<td>7</td>
<td>71%</td>
<td>43%</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>Automotive</td>
<td>2</td>
<td>50%</td>
<td>50%</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>Retail</td>
<td>1</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Professional Services</td>
<td>2</td>
<td>0%</td>
<td>0%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Rail and Freight</td>
<td>1</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Telecoms/Media</td>
<td>4</td>
<td>75%</td>
<td>50%</td>
<td>75%</td>
<td>25%</td>
</tr>
</tbody>
</table>

From the projects that were discussed, a large majority of the projects were based in financial services. With only one project in each of retail, manufacturing and rail. Looking at each of the industry specific projects, the rail and freight project was the one with most of the concepts fully applied however, as noted, there is only one project in this category.

Each of the projects discussed by the interviewees was evaluated against the four concepts to determine if certain participants discussed the concepts more than others, as shown in Figure 7 below.

Figure 7: Concept Application per interviewee

The projects discussed by participant B, C, D and G applied the lean startup concepts to various degrees in at least one of the projects they discussed. Where participants B, C and G also showed a strong understanding of the lean startup concepts while participant D applied the concept even though an understanding of LSM was not shown. On the other hand, participant F was not familiar with LSM and thus it showed, as the projects discussed did not apply the lean startup concepts. There were however participants E and H who were familiar with the concepts but did not apply the concept to a large extent.
The various customer engagement models namely B2B, B2C and hybrid were analysed against the LSM concepts as shown in Figure 8 below.

Validated learning was most commonly used in the B2C model, while innovation accounting was most commonly used in the B2B model. For both build measure learn and strategy applicability, these were most common used in the hybrid customer engagement model.

**Figure 8: Concept Application per Customer Engagement Model**

5. **DISCUSSION**

The purpose of the research was to better understand the extent to which lean startup principles have been applied in selected firms across industry in South Africa and how these have been used in developing the corporate and operations strategy. To carry this out professionals with extensive strategy consulting experience were interviewed to answer the research question. The research question sought to establish the extent to which the lean startup concepts were applied to the selected projects and the extent to which it influences strategy.

To help answer the research question, a proposition to be investigated was posited and four research objectives were defined. The proposition of the study was that the professionals interviewed may have been familiar with the concepts, but they did not necessarily apply the concepts. From the results obtained this proposition was supported, as some of the professionals were familiar with the concepts but no project had all the concepts applied in totality. This suggests that knowledge of LSM alone is not enough to ensure that the LSM concepts will be applied in totality and thus other considerations also need to be considered. Some of these are suggested below such as LSM being a relatively new concept outside of the technology environments.

Of the four research objectives defined, three were met and one was inconclusive. The objectives are expanded upon below.

5.1 **Objective 1: To establish the extent to which the lean startup concepts have been applied in selected South African firms.**

It was found that while most of the participants interviewed were familiar with lean startup as a concept, none of the participants applied the concept in totality. This is despite the observation that the number of participants who were familiar with the lean startup concepts was greater compared to research that was done earlier the concept was presumably still new. The reason for these participants, who were familiar with the lean startup concept, not applying the concept in totality could be attributed to several factors including the type of industry.
they focussed on, the way the South African corporate environment operates, or it could have been due to the LSM concepts being still relatively new outside of technology environments. On this point it should be noted that the cases presented in the literature on application of LSM are predominantly in technology environments, hence there may be unforeseen differences in application outside of these environments.

From the research it was found that heavy industries typically did not apply the concepts except for rail and freight. The lack of application of LSM in heavy industries could be attributed to the nature of the industry being more traditional while the exception of rail and freight could be attributed to the participant who discussed the project, being familiar with the LSM concepts. Another industry which did not apply the concepts was retail. From the literature it was found that the South African retail industry generally does not do as much experimentation but rather follows international trends, suggesting that the retail industry in South Africa is cautious and somewhat conservative and may not be as receptive to LSM concepts that require experimentation. On the other hand, it was noted that the participant involved with the retail project did not know about LSM which might have influenced the outcome. Both considerations might therefore have influenced the outcome from the retail industry. It was found that participants that were familiar with lean startup tended to apply the concepts more, even though they did not understand all the concepts in detail or were not aware that they were applying the concept. It was also found that participants with international experience or working for international organisations were more familiar with the concepts. This outcome, associating familiarity of concepts with international experience, was expected since the literature documents most of the successful cases of application of LSM as located outside of South Africa, particularly in developed countries.

5.2 Objective 2: To determine which of the lean startup concepts were applied.

The results showed that both validated learning and build measure learn concepts were applied partially with more-or-less similar frequency while, innovation accounting was applied to a lesser extent. When looking at the full application of the LSM concepts, the frequency of application was much less with the three LSM concepts (namely Validated Learning, Innovation Accounting and Build Measure Learn) being applied 6% each. From the results it was also found that participants who were not familiar with the concept would not apply the concepts in totality but might unknowingly apply the concepts partially. This suggests that while aspects of the LSM concepts have been applied on various projects analysed, the full application of the concepts was much fewer. The partial application of LSM, rather than the full application of the concepts, can be attributed to LSM being made up of several more traditional concepts which participants are more familiar with, and therefore perhaps more comfortable with.

5.3 Objective 3: To establish whether the lean startup concepts have been applied with the intention of helping develop the business and operations strategy through the top-down development approach.

Participants used the lean startup concepts to help develop the business or operations strategy (50% of projects discussed). When the projects were further analysed it was found that even participants not familiar with the concepts still unknowingly used some of the concepts to help develop strategy. This can be attributed to the participants being familiar with elements of LSM and using those elements to help develop the business and operations strategy. This suggests that using LSM and its concepts to help develop the business and operations strategy would be possible as confirmed by the projects that used it. On the other hand, participants that did not apply the concept could be attributed to lack of understanding of LSM or not viewing LSM as a tool to help develop strategy. This outcome serves as an interesting prospect that LSM, if well managed and better understood, has the potential of becoming an important tool when developing the business and operations strategy.

5.4 Objective 4: To determine what the success or failures were in implementing the lean startup concepts.

Since none of the projects analysed applied all the lean startup concepts in totality it was difficult to find from the partially applied LSM what the successes and failures were in applying the concepts at the planning stage. An alternative approach would be to follow the process even for partially applied LSM projects into implementation. The participants interviewed however, were strategy consultants who typically do not enter implementation of projects and hence would not be aware of what the long-term outcomes of the projects were. Thus, this objective of the research was not achieved.
6. CONCLUSION

The research question sought to determine the extent to which the lean startup methodology and/or its principles have been applied in selected South African organisations and how this influences the development of the business and operations strategy, using the top down development approach. From the results obtained, through addressing the research objectives, it was found that the LSM methodology was used to varying degrees depending on the type of project as well as the background of the professional being interviewed. Since the professionals interviewed had extensive experience in strategy development using the top down method, they were able to relate their use of lean startup methodology to help influence the strategy.

While the projects discussed were not necessarily labelled as lean startup or follow the LSM methodology explicitly, they showed signs of applying the concepts with the extent of application varying by project. Interestingly, even though there was variation of application by project, some features of LSM became apparent, for example it was found that validated learning and “build measure learn” were used more frequently than innovation accounting.

Overall, the application of the LSM concepts helped in developing the business and operations strategy although this was not done in all projects. From the participants it was found that lean startup is a concept that can be used across projects if there is proper support from management. Among limitations mentioned by participants as hindering application of LSM in South African industries was the making of decisions too quickly without evaluating the concepts thoroughly. LSM avoids this quick fix approach as by its nature LSM is methodological, being quantitatively based and using rigorous hypothesis testing to help develop a business model.

This work pioneers a study on the application of lean startup across industries in South Africa thus making a contribution. Although exploratory in nature, it provides a useful foundation for researchers wishing to carry the work forward. A framework has been provided and useful findings documented that other researchers can build upon. Further research should consider the limitations to application of LSM in South African industries and provide suggestions on how to overcome these.

REFERENCES


