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# The factors improving firm Performance in Competitive Intelligence on Small and Medium Enterprise in Gauteng, South Africa

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## ABSTRACT

The study aimed to investigate the extent to which the usefulness of Competitive Intelligence (CI) gives rise to improve competitive performances in Small and Medium Enterprise (SMEs) in South Africa. The study enhances the roles of technological and environmental factors in improving competitive advantage for SMEs, which focus on five geographical zones in Gauteng province only. Firstly, two models were applied in this study, the adoption of the Modified Technology Acceptance Model (TAM) in combination with the modified SMEs Competitiveness Model to investigate the extent to which competitive intelligence improved firm performance. Secondly, a quantitative research approach was applied, where purposive sampling was utilised as a data collecting tool from individuals at lower, middle and top management levels. This research argued that perceived ease of Use (PEOU) and perceived usefulness are the most important factors that determine the application of CI tools for competitive advantage in SMEs. The results indicate that, IT Training, SWOT and political, economic, social and technology (PEST) are also significant explanatory factors of competitive intelligence (CI) that enhance firm performance in the context of small and medium sized enterprises. All statistical analyses were performed by using structural equation modelling with the statistical package for the social sciences (SPSS) version 14.0. The study recommended that, before SMEs will survive beyond the remarkable year, technological tools, PEOU, and PU are important factors that explain the utility of SWOT and PEST which are found to be the best constructs for a new framework for the utilisation of CI tools in SMEs.

**Keywords**: Competitive Intelligence, SMEs, Perceived Ease of Use and Perceived Usefulness

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## 1. INTRODUCTION

Competitive intelligence (CI) is increasingly becoming vital in organisations in all sectors, be it private, non-profit organisation or public. The rapidly increasing global competition has made Competitive Intelligence an important tool for organizations' success. It is important that Small and Medium Enterprises (SMEs) keep abreast with what is happening in both the internal and external business environment. This is paramount for their sustainability and success, sustainability and success of SMEs is essential for the economic growth of any country especially in the developing country. Some researchers have described, that competitive intelligence is the process of developing actionable foresight regarding competitive dynamics and non-market factors that can be used to enhance competitive advantage [1]. It is simply a systematic process of determining information needs, collecting the right information for analysis and applying the results of the Competitive Intelligence process in strategic planning [2].

For the purpose of this study, Brody's definition has been embraced because it is wider and simple. [3] defines CI as "the process by which enterprises gather actionable information about competitors and the competitive environment and, ideally, apply it to their planning processes and decision-making in order to improve their enterprise's performance." CI helps organizations to understand and respond to their competitors in their internal and external environment. This implies that CI tools play important roles for the survival of organisations. It is crucial for SMEs to take cognisance of changes in their environment such as; political, legislatives, changes in customers' expectations and competitors' behaviours. Hence, benchmarking for internal and external best practice is needed for SMEs in the making of strategic decisions. Businesses need accurate, complete, and valid information for decision-making. From the strategic marketing point of view, CI is looked at as a tool that could be used for information collection [2]. Similarly, CI may also contribute to the technological knowledge and intelligence within organization. Such knowledge could be used in the analysis of information systems' innovations within organisations.

[4] noted that, CI is essential for the initiation of innovation process, observation of markets and in devising strategies. This could assist the organizations to excel in its business environment and to retain its customers. They asserted that, CI functionalities could also be extended in the production and manufacturing environment in designing and developing new products. Competition is not a force to be taken lightly in the business world. In fact, companies face competition every day [5]. Competitive dynamics refers to the evolution of a country's industries and the moves and countermoves of competitors, suppliers, customers, alliance partners and potential competitors [1]. Competitive dynamics includes the ability to provide products and services as or more effectively and efficiently than the relevant competitors; for example, success in international trade, high productivity, competitive cost of production and high quality of goods and share in regional or global markets [1]. The need for information about this force has been named "competitive information," "corporate intelligence," "corporate information" and "business intelligence.

## 2. PERCEPTION OF COMPETITIVE INTELLIGENCE AND BUSINESS INTELLIGENCE IN SMALL AND MEDIUM ENTERPRISES

Competitive Intelligence also referred to as corporate or business intelligence [6]. CI is confused with business intelligence (BI) [7]. The difference between BI and CI is that, BI is internal intelligence about and within one's own company, whereas CI is external intelligence about the firm's competitors [7]. BI plays a critical role in providing actionable intelligence to enable good business decision-making. International research shows clear evidence of the benefits of implementing sound BI practices [8]. According to [9] points out that BI system combine operational data with analytical tools to present complex and competitive information to planners and decision makers. The objective is to improve the timeliness and quality of inputs to the decision process. BI is used to understand the capabilities available in the firm; the state of the art, trends, and future directions in the markets, the technologies, and the regulatory environment in which the firm competes; and the actions of competitors and the implications of these actions [9].

According to [6] he pointed out that CI is the product of processed business information, meaning that it has been analysed and interpreted. Intelligence is anchored in past and present data to anticipate the future, in order to drive and guide decisions in enterprises. The intelligence field has developed several sub-domains, such as Competitive Technical Intelligence (CTI), which applies the intelligence process to the technical environment; sourcing intelligence, which is concerned with human resources; and Competitor Intelligence, which focuses purely on understanding competitors. CI and BI is an all-embracing approach to understanding a firm's competitive landscape [10].

According to [11], Competitive Intelligence scanning is an act of creating market opportunities from out wittingly discerning and zooming in on the right information favourable as well as unfavourable to the organization in the competitive race (the view from the author of the current research). For effective Competitive Intelligence scanning, members in teams or in the organization should have competencies to access and decode market information and build the whole portrait of opportunities from minimal decoded information earlier than its competitors.

### *3. Factors improving Competitive Intelligence Cycle*

The CI cycle had its origin in the Key Intelligence Topic (KIT) process [1]. This process was developed to allow the CI director to identify and prioritise both senior management and organisational Key Intelligence needs. In the KIT process it is determined what the CI unit should research and to whom this intelligence should be delivered. An effective CI process, according to the Society of Competitive Intelligence Professionals (SCIP), is run in a continuous cycle, called the CI cycle [7]. The SCIP describes the CI cycle as the process by which raw information is acquired, gathered, transmitted, evaluated, analysed and made available as finished intelligence for policymakers to use in decision making and action. According to [7] there are five phases which constitute this cycle, which are shown on **figure 3.1** below.1, Planning and direction, 2.Collection, 3.Analysis, 4.Dissemination; and 5. Feedback

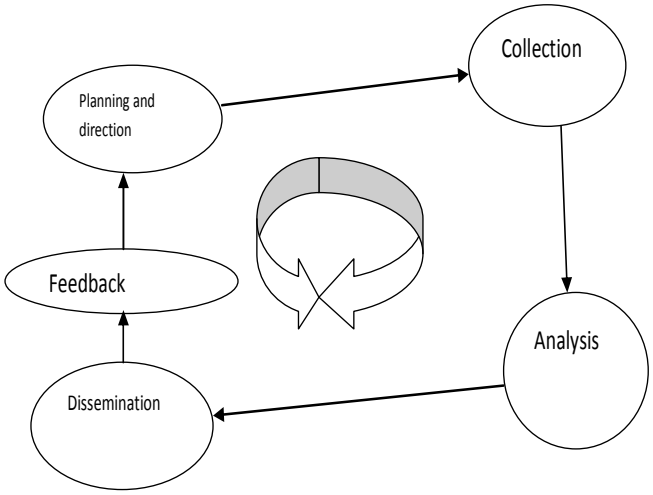


**Figure3.2: Competitive Intelligence Cycle. Source: [7]**

According to [1] the planning and focus phase concentrates on the identification of needs in order to collect all relevant information, which is the second phase. In the third phase all collected information must be verified to determine rationality and factuality of the analysis. This information is then communicated in an appropriate way to the relevant parties. The fifth phase requires the appropriate policies and procedures to be in place for CI to make a positive contribution to the organisation. The development of skills concludes the CI cycle [1].

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Training is an additional construct to the CI process, it is clear that training contributes to the success of each phase. It is important that a regular audit is conducted to determine the level of CI skills in organisations. Training is then initiated according to the organisation's identified needs as shown below by [12].

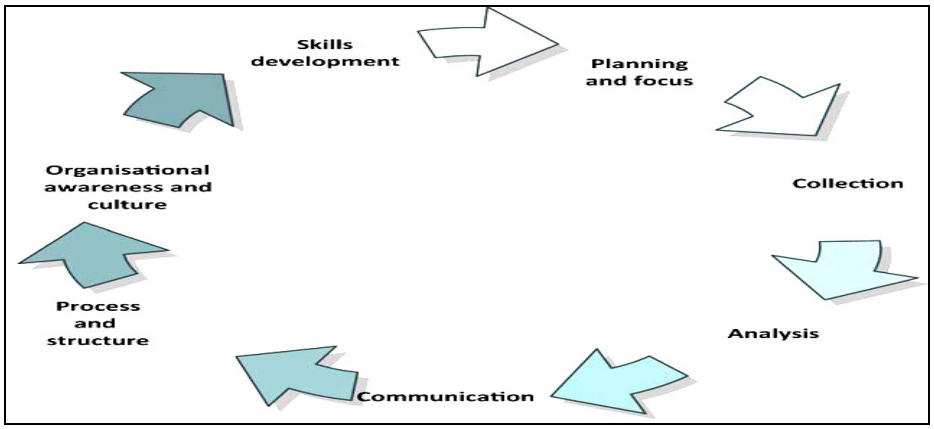


**Figure 3.3: CI cycle. Source: Muller [12]**

A study conducted by [2] explored CI as a complex business construct and as a precedent for marketing strategy formulation as shown in **Figure 3,3** below. This research develops and tests intelligence as a precedent to marketing strategy formulation, revealing multiple phases and contributing aspects within the process. It also discovers that the practice of Competitive Intelligence, while strong in the area of information collection is weak from a process and analytical perspective. The figure below demonstrates the Competitive Intelligence Process and Structure

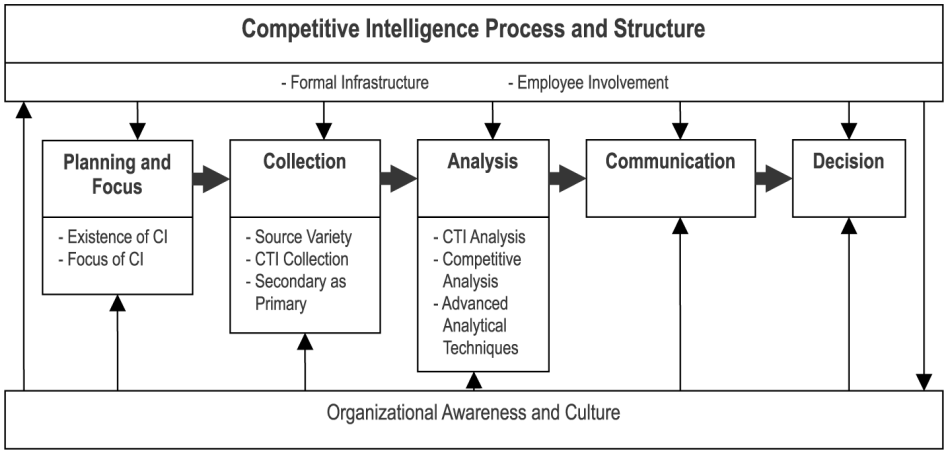


**Figure 3.3: Model of Competitive Intelligence Process. Source: [2]**

The model of the intelligence process provides insight as to significant factors related to the various phases. The intelligence process and structure as well as the organizational awareness and culture are seen as having direct impact on all of the various phases in the intelligence course. From the intelligence process and structure, two factors have arisen:

(1) The existence of a formal infrastructure; and (2) The level of employee involvement. [13] presented a formulation of the System of Competitive Intelligence that is up-to-date and responsive to an area of research which enables the constant upgrading and improvement of business management practices, so that a competitive edge may be maintained and a market differentiation established. From the results gathered, the construction of the model will be started and its strong and weak points commented upon. It was observed that the Model of System of Competitive Intelligence can guarantee the survival of a company, through analysing information quickly and in an integrated way, thus permitting well-founded decisions to be made in real time. The design of Competitive Intelligence, as a process that monitors all elements of the external environment of an organization is still recent. Competitive Intelligence is the product of an input process that begins with the Collection of Data, which is Planning, Collection, Analysis and Dissemination of information as shown in **Figure 3.4 below.**

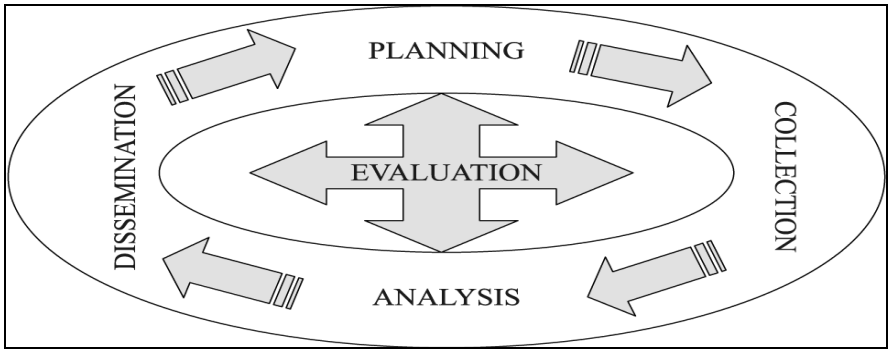


**Figure 3.4: Intelligence cycle. Source: [13]**

In order to measure and take into consideration the response of the decision-makers, their needs for intelligence must be continually taken into account. And even, perhaps, to the extent that the whole process must be repeated. CI as the term suggests, is the gathering of "intelligence" about the environment and competitors in order to create and maintain a competitive commercial advantage [14]. In South Africa and Belgium, exporters are not yet well equipped and not very active to conduct effective CI, especially in the areas of planning, process and structure, data collection, data analysis, and especially skills development [15].

## 4. POLITICAL, ECONOMIC, SOCIAL AND TECHNOLOGICAL (PEST) IMPACTED COMPETITIVE INTELLIGENCE

For every business to exist it is highly dependent on the external environment in which an organisation exists. PEST is a useful tool for understanding the environment that an organisation operates in. Factors can be used for evaluating market growth or decline, and direction for a business. CI tool entails that the organisations have to be aligned with what is happening within their political, environment, society and technological areas within their industry in order to stay competitive [16]. Researchers define the PEST analysis as follows: (1) Political factors include government regulations such as employment laws, environmental regulations and tax policy. (2) Economic factors are those that affect the cost of capital and purchasing power of an organisation. They include economic growth, interest rates, inflation and currency exchange rates. (3) Social factors are those that impact on the consumers' needs and the potential market size for an organisation's goods and service. They include population growth age demographics and attitudes towards health. Technological factors are those that influence barriers to entry, make or buy decisions and investment in innovation, such as automation, incentives and the rate of technological change.

## 5. THE IMPORTANCE OF COMPETITIVE INTELLIGENCE ON FIRM PERFORMANCE

Globally, organisations are paying attention to CI, because it supports organisational needs in terms of gathering, interpreting and disseminating external information [1]. CI is a vital component of a company's strategic planning and management process. It pulls together data and information from a large and strategic view, allowing a company to predict or focus on what is going to happen in its competitive environment [7]. According to [17], CI leads to achieving innovation and ensures the survival of the organization. CI is used particularly in supporting competitive action – for pricing, in determining market strategies, in preparing for merger or take-over talks and so on. In the study conducted by [10], they pointed out that the intent of CI is to better understand customers, regulators, competitors and so forth to create new opportunities and forecast changes in the quest for sustainable competitive advantage. The primary output from CI is the ability to make forward-looking decisions. CI can be classified in two ways. The first one, strategic CI, can inform senior management of the possible Threats and Opportunities, while the second, tactical CI, can be used to organise the company's staff around developing the changes needed based on the insights gained by CI. The most common benefit of CI,

however is its ability to build information profiles that helps a company identify its competitor's Strengths, Weaknesses, Strategies, Objectives, Market positioning and likely Reaction patterns. In addition, [5] lists the benefits of obtaining CI for businesses and suggests that the benefits far outweigh the costs. The four major benefits are as follows:

> (1) Differentiation, (2) Cohesive marketing communication plans, (3) Pre-selling an idea to the target audience, and (4) Building credibility with your customer.

This information profiles include data needed to effectively identify, classify and track competitors and their behaviour. Using them, a company begins to look for points of comparison regarding its strengths and weaknesses versus its competitors [7]. The value of the intelligence, produced through a CI program, can possibly be measured across one or more of the following attributes

- Accuracy – all sources and data must be evaluated for the possibility of technical error or misperception;
- Objectivity; Systems is designed to accomplished more goals and objectives
- Usability – must be in a form that facilitates ready comprehension and immediate application;
- Relevance – its applicability to a decision maker's requirements, with potential consequences and significance of the information made explicit to the decision maker's circumstances;
- Readiness – CI systems must be responsive to the existing and contingent intelligence requirements of decision makers for all levels of the organization; and
- Timeliness – intelligence must be delivered while the content is still actionable under the decision maker's circumstances.

CI represents a continuous process of gathering data, information and knowledge about actors (competitors, customers, suppliers, government etc) which interact with organization in the business environment in order to support decision making process for enhancing competitiveness of organization.

Recently, [18] indicated that the use of CI impact positively on the growth; however the quality and performance receives less influence, as a competitive advantage of the organization.

It concentrates on identification of change and market, rivalry, technology, novelty, pattern of customer behaviours, and the future prediction trends, which are needed for competition. In fact, CI is a process of figuring out what is happening and deciding what steps and actions should be taken before one's competitors. Some benefits of using Competitive Intelligence include differentiation, cohesive marketing communication plans, pre-selling as an idea to the target audience and having the ability to build credibility with customers.

## 6. BACKGROUND OF RESEARCH PROBLEM

The purpose of this study is to determine the extent to which the factors of Competitive Intelligence improving firm performance in SMEs. The aims to achieve this, by examining the roles of a selection of Technological factors and specific Environmental factors in enhancing Competitive advantage for Small and Medium size companies, within the Telecommunications Industry in the Gauteng Province. Although competitive intelligence plays a key role in companies' strategic management with a view to sustaining competitive advantage but research shows that after intensive study on SMEs, companies are still not survivals in South Africa, in to order meet up with their highly expectations.

## 7. RESEARCH OBJECTIVE

**The main objective** of this study is to investigate factors improving firm performance on Competitive Intelligence in SME's in Gauteng, South Africa.

## 8. THEORETICAL FRAMEWORK

**Figure 8.1** below is a representation of the theoretical framework which is discussed factors improving competitive intelligence. This theory is fundamentally divided into three sections namely; Technological Factors, CI Tools, and Entrepreneurial competencies.

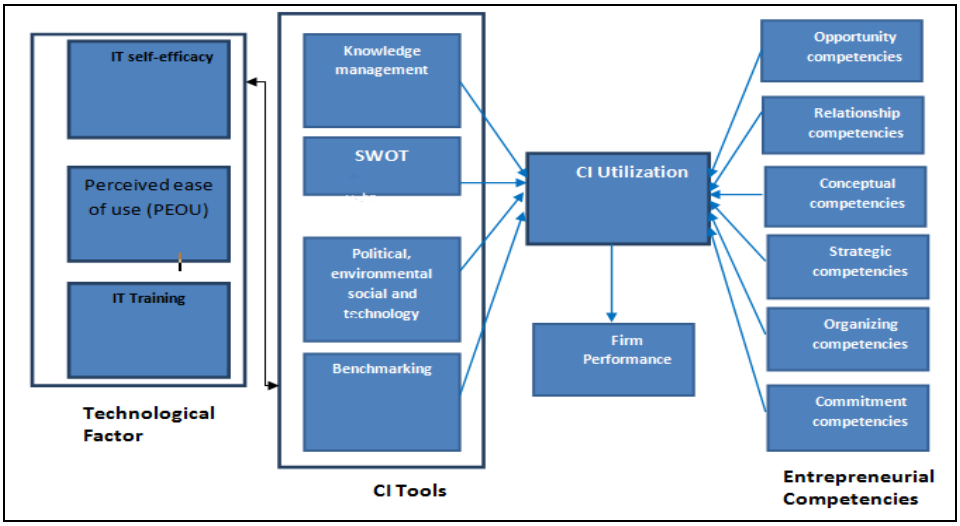


**Figure 8.2 Modified Theoretical Model TAM [19] & Competitiveness Model [20]**

***Technological Factors***

Technological factors are referred to as factors that are relating to technique or proficiency in practical skills when using IT system [21]. In the context of SMEs competency systems, technical factors may be looked at as those factors that influence the use of IT to utilize CI tools like SWOT analysis, PEST, Knowledge Management and Benchmarking.

**Information Technology Efficacy**

CI has benefited from advances in Information Technology Infrastructure and the elevation of Knowledge Management into a dominant corporate function [12]. A key thrust of CI is analysis, which turns raw data (a collection of facts, figures, and statistics relating to business operations) into actionable intelligence (data organized and interpreted to reveal underlying patterns, trends, and interrelationships) [22]. The growth of CI has important implications for both the management and operation of IT units, as IT resources are called upon to support CI activities elsewhere within organizations. CI management is a well-established function in organisations in developed countries, because managers realise that if they do not monitor the actions and activities of their competitors, their strategic plans will fail [1]. Nevertheless, organisations in African countries continue to be surprised by undesirable changes in the environment and it appears that the advances in managing intelligence are as yet largely unknown in these countries.

**Perceived Ease of Use (PEOU)**

Technology Acceptance Model [23] is regarded as the most noticeable model describing the acceptance computer technology. Research had identified TAM as a cost effective tool for predicting user acceptance of systems. A study of [24] describe Perceived Usefulness and Perceived Ease of Use as factors that predict user acceptance of a technology. They further argued that substantial theoretical and empirical support has accumulated in favour of TAM compared with alternative models such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour.

**Perceived Usefulness (PU)** is defined as the users' subjective probability that using a certain application system will increase his or her job performance [19] .

IT Training

IT training in the use of CI is regarded as an important factor for adoption and use of Competitive Intelligence. An information system user's satisfaction can be measured by some attributes of the system. The reality of the CI function in the South African organisational structure still holds a demoted position [1]. Individuals who developed this function now view it as a "back-room" activity. The overwhelming result is that there are skills inequalities between what skills respondents view as crucial and those that rated highest in their self-evaluation. Skills identified as most important include, among others, networking, research skills and analytical abilities

According to [12] listed the generally accepted skills put together by practising CI professionals; **Traits** – creativity, persistence, written and oral communication skills, analytical ability, understanding of scientific methodology, independent learning skills and business understanding. **Teachable skills** – strategic thinking, business terminology, market research presentation skills, knowledge of primary information sources and research methods, enhancement of journalistic interviewing, analytical abilities. **Professional experience** – knowledge of corporate power structures and decision-making processes, industry knowledge, enhancement of primary research skills.

**Competitive Intelligence Tools and knowledge Management**

According to [25], Knowledge Management (KM) is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organisation's objectives. A study conducted by [14] he suggested that the concept of Knowledge Management is maturing to the point where different strands are being identified. In the study conducted by [26] added that KM is the capturing, filing and categorization of the information and Competitive Intelligence the focusing, analysing and auctioning of data. Without knowledge Management one could not do Competitive Intelligence as it requires access to information. Knowledge of Information Technology is also a prerequisite for natural implementation of the concept of Competitive Intelligence [27]. They concluded that a suitable equation of the technological dimension in a firm presupposes the existence of a critical internal mass, particularly in terms of qualifications and competences. Knowing how to add value to information in order to obtain a competitive advantage is the real key factor for implementing a CI process.

**The SWOT**

SWOT refers to a structured planning method used to evaluate the strengths, Weakness, Opportunities, and Threats involved in a business venture. The value of this modified SWOT analysis in the evaluation of current tools and techniques lies in the identification of where they are best applied, and the understanding of their limitations [7]. The need to systematically acquire and analyse intelligence from internal and external business environment is seen as a crucial element in making effective business decisions. The SWOT analysis framework is quite commonly used to evaluate a company – where Strengths and Weaknesses are "internal" evaluations of the company's competencies, whereas Opportunities and Threats are "external" evaluations about the industry or market within which the company does business [7]. Thus, to apply the traditional SWOT framework to analyse tools and techniques, the traditional questions for each quadrant have been adjusted accordingly.

**Political, Economic, Social and Technological Factors (PEST)**

Environments pose important constraints and contingencies for organisations, and their competitiveness depends on their ability to monitor and adapt their strategies based on information acquired through Competitive Intelligence activities [28]. The most used tools include PEST analysis, scenario analysis [29]. Environmental uncertainty increases information processing need as managers must identify opportunities and threats, and implement necessary strategies and structural adaptations [30]. CI contributes by providing analysis and understanding of the company's external environment [1]. In order to create and maintain a market advantage, firms must monitor a vast array of factors about competitor activities, which include all aspects of the business [29].

**Benchmarking**

The concept of benchmarking is not new, as companies have used it for many years. It is used to measure performance using specific indicators cost per unit of measure which usually uses quality time and cost. Benchmarking can be referred to as a measurement of the quality of an organisation's policies, products, programs, strategies, etc. and their comparison with standard measurements. CI recognises that information on companies is only valid if information on the environment is also collected [14]. This may relate to the general economic situation, to trends in the particular industry or geographic area, to changes in legislation or to developments in technology. This is where CI gains over benchmarking: benchmarking simply uses information on competitor performance; it fails to identify environmental factors that may have significantly affected that performance [14].

Research conducted by [31], stated that, two functions are involved when benchmarking. It covers areas where extent factors that deal with setting goals by using objectives to extend valve and secondly tear learning from offers. The study [31] also argued that benchmarking does not replace strategic planning but it supports it. Therefore benchmarking can be used to research any company that produces similar products and services. The process of benchmarking involves different ways to practice it and many organisations have their own way of benchmarking that suits their need. However, [31] identifies the benchmarking processes as follows:

- Deciding on the scope of word by identifying what to benchmark
- Planning the benchmarking process
- Understanding your own SWOT analysis
- Research your competitors to understand how they perform
- Learning from date to quantity performance gaps and identity which parties that might be particularly useful to performance

Furthermore researchers have identified that benchmarking can be divided into two categories, competitive benchmarking and process benchmarking. Competitive benchmarking measures performance of the organisation against competitors, it relies on a set of predetermined performance entries. Process benchmarking measures the performance of the process and overall functioning of the organisation that leads in these processes. The oval purpose of benchmarking is to provide realistic goals to improve the various processes within organisations. The results should be to improve competitiveness position of the organisation.

***Entrepreneurial Competencies improving firm Performance***

Entrepreneurial competencies can be defined as individual; characteristics that include both attitudes and behaviours which enable entrepreneur to achieve and maintain business success. The competitive scope of SME's lies firmly within the entrepreneur's opportunity, relationship, conceptual, organizing, and strategic and commitment competencies. The entrepreneur's experience, education, and training can be seen as the antecedents of entrepreneurial competencies. More importantly, for an SME's, the process of achieving competitiveness is strongly influenced by the key players of competencies [32]. The significance of inspecting the environment has been associated to the performance and growth of the firm. It helps in dealing with information and strategic decision-making, which ultimately leads the organisation to grab more market share [18]. Non-satisfactory competitive practices lead to insufficient market value [18]. The competitive scope of an SME's lies firmly within the entrepreneur's opportunity, relationship, conceptual, organizing, and strategic and commitment competencies.

## 9. RESEARCH METHODOLOGY

In this section the research design is described with emphasis on the research strategy, and data collection method as well as the research approach. The study followed a quantitative approach where a case study was employed. The case study was an appropriate strategy in the reported study and focused on five SME's in the Telecommunications industry, based in Gauteng Province. For the purpose of the study, these SME's were given simulated names. To gather the primary empirical data, quantitative survey questionnaires were used for the study. All statistical analyses were performed by using structural equation modelling with the Statistical Package for the Social Sciences (SPSS) version 14.0. Underpinning this research, two models were applied; an adaptation of the modified technology acceptance model (TAM) in combination with the Perceived ease of use Model (PEOU) to investigate the factor improving firm performance on competitive intelligence to SMEs in the context of South Africa.

## 10. SUMMARY OF THE FINDINGS, AND CONCLUSION

The purpose of this study is to present the analysis of the collected data as well as the findings in keeping with the aims and objectives of this research. The first part of the section presents a tabulation of the demographic characteristics of the sample of the subjects surveyed. The second part presents the Descriptive Analysis and Data Analysis in relation to the responses of the subjects. This is followed by an analysis of the patterns of data for each research hypothesis by using a range of inferential techniques. All statistical analyses were performed by using structural equation modelling with the Statistical Package for the Social Sciences (SPSS) version 14.0.

**The Table below represents Descriptive Statistics analysis: Table 1**

**Coefficients**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Colinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Tolerance | VIF |
| (Constant) | 1.189 | 1.316 | | .903 | .368 | | |
| PEOU | .241 | .058 | .281 | 4.197 | .000 | .719 | 1.391 |
| ITtraining | -.228 | .056 | -.303 | -4.091 | .000 | .590 | 1.695 |
| Knowledge Management | .039 | .065 | .045 | .598 | .550 | .580 | 1.724 |
| SWOT | .131 | .032 | .311 | 4.135 | .000 | .572 | 1.748 |
| PEST | .224 | .035 | .420 | 6.323 | .000 | .734 | 1.363 |

**Explanation:** The highlighted variables above are all significant at 0.05; level except for the Knowledge Management.

**Correlations**

Before one undertakes Regression Analysis, it is always necessary to undertake a Correlation Analysis between the independent and the dependent variables in order to check for multicollinearity (high correlation between the variables). High multicollinearity may result in findings being confounded. The formula used is as provided below:

$$r = \frac{\sum_{i=1}^{n}(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^{n}(X_i - \bar{X})^2}\sqrt{\sum_{i=1}^{n}(Y_i - \bar{Y})^2}}$$

**Table 2: showing Correlations**

**Correlations**

| | | ITE | PEOU | IT training | Knowledge Management | SWOT | PEST | CI Utilisation |
|---|---|---|---|---|---|---|---|---|
| ITE | Pearson Correlation | 1 | .263** | .262** | .274** | .554** | .255** | .547** |
| | Sig. (2-tailed) | | .001 | .001 | .000 | .000 | .001 | .000 |
| | N | 165 | 165 | 164 | 164 | 164 | 164 | 164 |
| PEOU | Pearson Correlation | .263** | 1 | .374** | .440** | .453** | .348** | .475** |
| | Sig. (2-tailed) | .001 | | .000 | .000 | .000 | .000 | .000 |
| | N | 165 | 165 | 164 | 164 | 164 | 164 | 164 |
| IT training | Pearson Correlation | .262** | .374** | 1 | .568** | .516** | .397** | .155* |
| | Sig. (2-tailed) | .001 | .000 | | .000 | .000 | .000 | .048 |
| | N | 164 | 164 | 164 | 164 | 164 | 164 | 164 |
| Knowledge Management | Pearson Correlation | .274** | .440** | .568** | 1 | .517** | .338** | .299** |
| | Sig. (2-tailed) | .000 | .000 | .000 | | .000 | .000 | .000 |
| | N | 164 | 164 | 164 | 164 | 164 | 164 | 164 |
| SWOT | Pearson Correlation | .554** | .453** | .516** | .517** | 1 | .467** | .501** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | | .000 | .000 |
| | N | 164 | 164 | 164 | 164 | 164 | 164 | 164 |
| PEST | Pearson Correlation | .255** | .348** | .397** | .338** | .467** | 1 | .558** |
| | Sig. (2-tailed) | .001 | .000 | .000 | .000 | .000 | | .000 |
| | N | 164 | 164 | 164 | 164 | 164 | 164 | 164 |
| CI Utilisation | Pearson Correlation | .547** | .475** | .155* | .299** | .501** | .558** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .048 | .000 | .000 | .000 | |
| | N | 164 | 164 | 164 | 164 | 164 | 164 | 164 |

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

***Regression Analysis***

The purpose of the research is to demonstrate that *Perceived Ease Of Use* and P*erceived Usefulness* are the most important factors that explain the utility of Competitive Intelligence (CI). The best test to model the above relationship is the regression analysis where CI is specified as the criterion or dependent (Y) variable and PEU and PU are modelled as independent or predictor variables (X).

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**The formula utilised is presented as below:**

$$y_i = \beta_0 + \beta_1 x_i + \varepsilon_i, \quad i = 1, \ldots, n.$$

Where $y_i$ is the dependent variable, β are the coefficients and $x_i$ is the independent variables.

**Based on the Regression Analysis, the results are as follows:-**

**Table 3: showing CI Regression**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 486.963 | 5 | 97.393 | 30.316 | .000[b] |
| | Residual | 507.592 | 158 | 3.213 | | |
| | Total | 994.555 | 163 | | | |

The results show that the regression model is significant, implying that x predicts y. The highlighted variables below are all significant at 0.05 level except for the knowledge management variable.

**Table 4: showing Regression**

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| CI Utilisation | 11.6646 | 2.47013 | 164 |
| PEOU | 18.8049 | 2.87975 | 164 |
| IT training | 22.9634 | 3.27641 | 164 |
| Knowledge Management | 23.3720 | 2.82876 | 164 |
| SWOT | 34.5549 | 5.83858 | 164 |
| PEST | 25.5610 | 4.62747 | 164 |

As a measure of association, Regression Analysis is utilised to ascertain the degree of Association between variables. That is, it is about knowing if a high level of one variable tends to be associated with (or goes with) a high or low level of another variable.

**Table 5: showing variables entered**

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | PEST, Knowledge Management, PEOU, IT training, SWOT[b] | . | Enter |

(a) Dependent variable: C I utilisation (b) all requested variable entered

**Findings**: From the results above, the PEST and SWOT are the CI tools that are needed for improving firm performance to enhance competitive advantage. Knowledge Management and Benchmarking are removed because they do not have correlation with other variables of firm performance to enhance competitive advantage. Based on the findings, the results proved that (PEOU), PU and IT Training are the technological factors that enhance the usage of CI tools for competitive advantage in the SMEs. The prime sampling method utilised in this research was convenient sampling or cohort analysis. This method was selected on the basis that it would ensure greater homogeneity of the respondents surveyed. It was important to ascertain how successful this exercise has been. To this end, Descriptive Statistics was used to present the frequency distributions of subjects' responses. A summary is presented in the chart below:

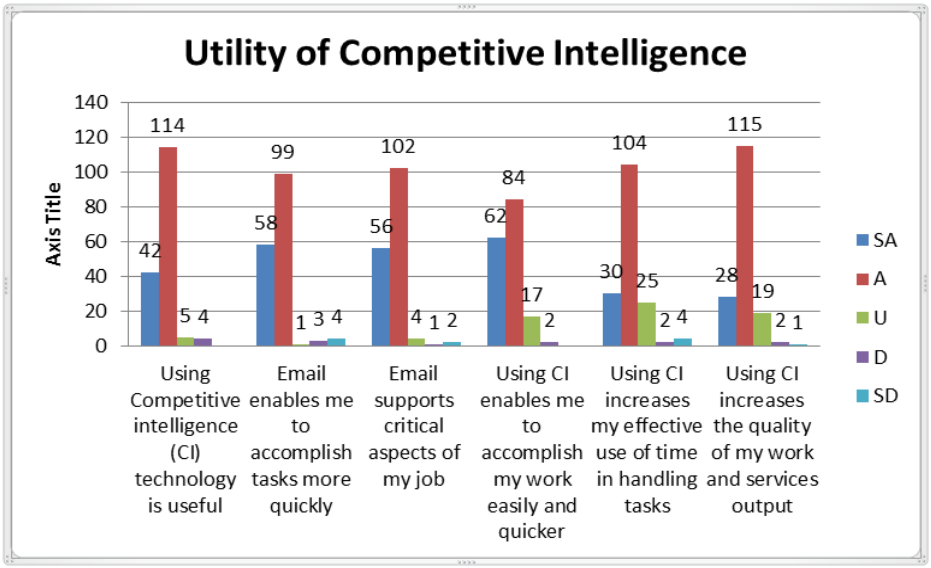


**Figure 6 Utility of Competitive Intelligence**

The above summarizes the responses, when participants were asked about their firm performance use of competitive intelligence to improve their work.

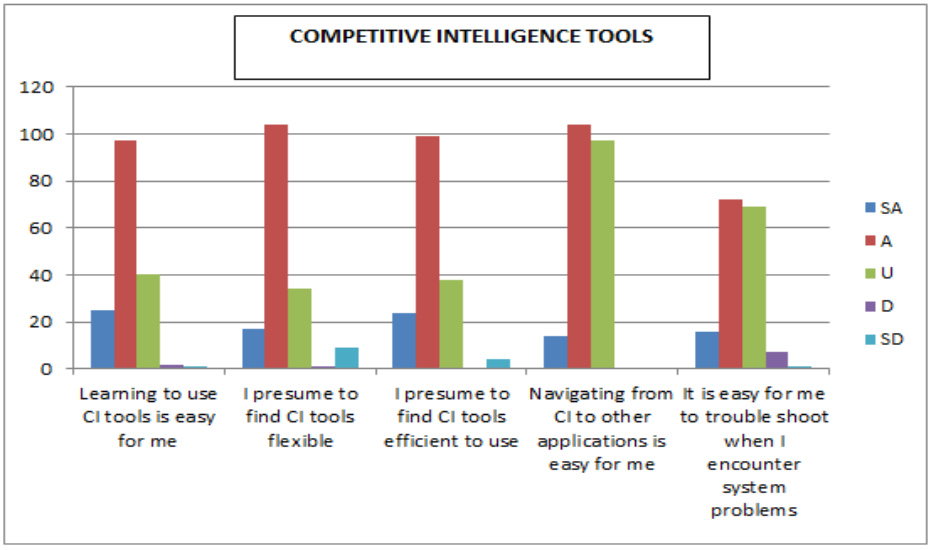


**Table 7 shows the competitive intelligence tools**

The above summarizes the perception of participants on how they adopt and adapts to the systems of competitive intelligence to enhance firm performance.

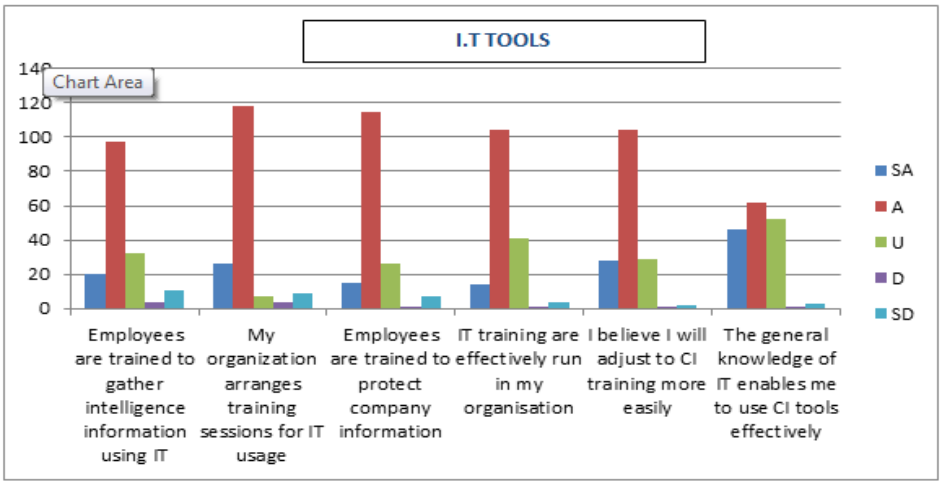


**Figure 8 showing technology tools**

The above summarizes the firm performance by using of technology aspect tools to enhance competitive intelligence, to improve and protection of organization information.

**Internal Comparison Reliability**

Internal Comparison Reliability referred to as Internal Consistency is said to exist when the scores on several questions, all of which were designed to measure a characteristic or construct such as utilization of Competitive Intelligence (CI) are all highly correlated. A Cronbach Alpha test was undertaken to achieve this in the first instance, and the following results bear this out. Normally, a Cronbach alpha score greater or equal to 0.70 is regarded as an acceptable level for indicating internal consistency. This allows a researcher to calculate a composite score on a construct such as utilization of Competitive Intelligence (CI). The formula normally used for a cronbach's alpha measure is presented as follows:-

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K} \sigma_{Y_i}^2}{\sigma_X^2}\right)$$

where $\sigma_X^2$ is the variance of the observed total test scores, and $\sigma_{Y_i}^2$ is the variance of component i for the current sample of persons.

## 11. TECHNOLOGICAL FACTORS

**Result of Cronbach"s Alpha**

| cronbach's Alpha | N of Items |
|---|---|
| .850 | 6 |

In addition to the Descriptive Statistics (such as frequency distributions etc) several inferential statics were conducted in a bid to determine the significance of the relation between Competitive Intelligence (CI) and other variables (eg Technological and PEST factors), that together result in enhanced competitive advantage in Small and Medium Enterprises. These statistics were essentially measures of Association between the predictor and criterion variables. The most important of these was Regression Analysis. From the findings, it was established that *technological factors, PEOU* and *P U* are the most important factors that explain the utility of Competitive Intelligence (CI). It is hypothesised that environmental factors could have a negative impact on a firm's performance. However, based on the findings the results have only proven that (PEOU), PU and IT Training are the technological factors that enhance the usage of SWOT and PEST to enhance competitive advantage in SME's. These explain the new framework for utilisation of CI tools in SME's.

## 12. SUMMARY

In the summary, the analysis suggests that (PEOU) and (PU) are the most important factors that explain the benefit of firm performance of SWOT and PEST for competitive advantage in SMEs. The results also indicated that IT Training, SWOT and PEST are also significant explanatory factors of Competitive Intelligence (CI) in the context of SMEs. However, KM and Benchmarking were found to be non-correlative. These findings are important particularly in relation to the purpose and propositions of this research.

## 13. CONCLUSION

Enterprises in South Africa need more information-handling skills, to perform a sustainable business survival, if they would like to participate in a successful rapidly changing world economic growth. Business Survival must acquire the skills, in term of business innovations, technology and flexibility associated with intelligence. Informal monitoring of competitive developments is no longer sufficient to ensure timely warning of competitors' moves or the opening of new opportunities. Increasingly, trade performance will depend on the quality of a country's coordinated intelligence capabilities. Effective CI can give South African enterprises many strategic advantages. Commercial success will be more and more dependent on having the best intelligence systems and resources that means proper intelligence management. Changes in patterns of access to and utilization of intelligence, knowledge and information are taking place daily in industrialized countries and there are many ways of responding to the intelligence challenge. It is therefore paramount that South African manufacturing enterprises should take cognizance of developments in other countries so as to keep up with current developments.

## 14. RECOMMENDATION

From this study, recommendations that can be drawn are that for SMEs to survive beyond the five year mark, technological tools such as PEOU, and PU are most important factors that explain the firm performance of SWOT and PEST which are found to be the best constructs for a new framework for the utilisation of CI tools in SMEs.

### Suggestion for Future Works

Based on the suggestion for future work by the researchers, they observed that, there is still a dearth on the study on process of adoption, challenges facing on the adoption, and acceptability of the adoption, therefore it is open for further studies. This will help us to evaluate the impact of these systems in various services. However the suggestion for the future work will also shed light on software application usage in different organisation on the ease of job performance, skill generation and the professional improvement and productivity as a whole.

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