The influence of entrepreneurial orientation on operational efficiency and performance in South African manufacturing SMEs

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Keywords

Entrepreneurial orientation,

Operational efficiency,

Manufacturing SMEs,

Business performance

Abstract

Forward-looking manufacturing SMEs today are agile, dynamic, and responsive. They play an essential part in employment creation, innovation, and creativity and earn their countries' much-needed foreign currency. However, in South Africa, manufacturing SMEs show stagnant turnover and employment growth. The study tested a conceptual framework for entrepreneurial orientation, operational efficiency, and performance in SMEs in South Africa. A quantitative approach was employed, and data was gathered using a survey questionnaire distributed to a purposively drawn sample of 494 SME owners, managers, and professional staff in the Gauteng Province of South Africa. The SMART partial least squares (PLS, version 3.0) package was utilised as a tool for data analysis. Hypotheses tests showed that all entrepreneurial orientation practices influence the operational efficiency of manufacturing SMEs. The study also confirmed that operational efficiency positively affects SMEs' financial and non-financial performance. The study proposes a new model of entrepreneurial orientation, operational efficiency, and organisational performance of SMEs. The study is essential as it offers innovative and new insights into entrepreneurial orientation and business performance to the existing body of knowledge within the sphere of entrepreneurship in South Africa and other developing countries.

1. Introduction

Manufacturing SMEs are primarily recognised as vital contributors to economic development in most countries worldwide. Their economic impact is most noticeable in areas such as employment and wealth creation (Kaplinsky & Morris, 2019). In South Africa, manufacturing SMEs have been hailed to account for roughly 40% to 45% of South Africa's gross domestic product (GDP) and have generated an estimated 54% of employment in the past few years (Statistics South Africa, 2023). However, the success of manufacturing SMEs has not shown resilience and growth, which is attributed to numerous challenges. Despite positive interventions by the government through the Ministry of Small Business Development (MSBD) to promote growth, development, and survival, most manufacturing SMEs in South Africa face several complex challenges (Ngibe & Lekhanya,

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2019). Fatoki (2019) observes that obstacles to the success of SMEs are felt far more in these modern times than previously.

Entrepreneurship has become a key part of economies, and having an entrepreneurial orientation for manufacturing SMEs is essential for success. Bikitsha and Amoah (20220 described entrepreneurial orientation as actions which includes the development of new products and markets, proactive behavior, risk-taking, the start-up of new organisations and the growth of an existing organisation. There is increasing awareness in the global communities regarding the importance of entrepreneurial orientation (EO) as it has been identified as one of the driving factors advancing economic growth in manufacturing companies worldwide (Kim & Hur, 2024). In the context of development, EO adoption can create new opportunities, increases the production of products and enhances global prosperity and competitiveness. Similarly, there are many organisational factors that influence performance, and they include operational efficiency. Operational efficiency refers to an organisation's ability to reduce waste of time, effort and material while still producing a high-quality service or product (Bikitsha & Amoah, 2022). Kim and Hur, (2024) note that operational efficiency is a measure that balances the input such as costs, employees and time against the output, which includes factors like rapid development times, quality, revenue, customer acquisition and customer satisfaction. Therefore, this study placed considerable emphasis on the influence of EO on operational efficiency and performance in South African manufacturing SMEs. Consequently, it is important for entrepreneurs to continuously self-renew (in terms EO) o by focusing on opportunities aimed to drive operational efficiency and performance in their manufacturing SMEs.

1.1. Background

The main challenges facing manufacturing SMEs in South Africa include access to resources, leadership, lack of marketing, poor management, political, social, and technological advances, human resources, evolving business landscape, and financial management issues (Ouma-Mugabe et al., 2021). Of these challenges, the lack of EO and the absence of operational efficiency in the manufacturing processes have been labelled the two leading challenges encountered by manufacturing SMEs in South Africa (Bikitsha & Amoah, 2022). EO is a managerial style based on bold, risky, and aggressive decision-making (Kim & Hur, 2024). Ringo, Kazungu and Tegambwage (2023) postulate that EO is an organisational-level, strategy-making process comprising five dimensions: innovativeness, risk-taking, proactiveness, competitive aggressiveness, and autonomy. These insights suggest that EO is a disposition, mindset, and way of conducting business.

Manufacturing SMEs are defined as small businesses that convert or transform raw materials or combine other products to produce finished goods that are essential and needed by customers and other organisations for their operations (Kim & Hur, 2024). In South Africa, manufacturing SMEs are considered established businesses, listed and mainly operating in a particular business location with a range of five to 100 paid employees performing their duties at that permanent business premise (Ramsuraj, 2023). Operational efficiency is a metric that compares a company's profit with the costs required to make that profit. More specifically, operational efficiency compares the input required to sustain a business, including costs, employees and time, with the output gained, including revenue, market differentiation, customer acquisition and customer retention (Ringo *et al*, 2023). Al-Hakimi *et al*. (2023) state that operational efficiency is a significant construct of operational efficiency, and it includes various components, such as labour productivity, production capacity, turnaround time and profitability. One way to improve process efficiency is by replacing outdated or slow processes and investing in automation. Business performance can be defined as the degree to which the organisation carries its goals and objectives into effect (Mokbel *et al.,* 2022). It is exhibited by the accomplishment of tasks by the employees of a firm as well as the quality of these completed tasks at the close of a specific business period as measured against predetermined targets or aims (Dwikat, Arshad & Mohd Shariff, 2022). To measure business performance, either subjective or objective scales may be used (Kharub, Mor & Rana, 2022). To counteract the shortcomings of either method, both subjective and objective methods can be integrated (Kharub *et al*., 2022). In this study, both financial and non-financial performance measurements are considered.

The remaining sections of the paper are divided as follows: The next section discusses the problem statement followed by the research objectives. The succeeding section reviews the literature and proposes the seven hypotheses that are intended to establish the conceptual model of the article. Thereafter, Section 3 details the methodology used to collect and validate the data and Section 4 conducts the analysis and discusses results. The final section summarises the paper, presenting managerial implications of the findings and concludes with a discussion of the limitations of this study and avenues for future research.

1.2. Problem Statement

This study aimed to examine the link between EO, operational efficiency and business performance in the manufacturing SMEs in the Gauteng province. There is a considerable stream of research establishing the casual link of firm-level EO with organisations' successful performance (Meekaewkunchorn et al., 2021), but it is only recently that EO and its outcomes are tested (Susanto et al., 2023). Particularly, in the context of South Africa, a few studies examined EO and SMEs performance from the firm-level perspective (Mathafena & Msimango-Galawe, 2023), leaving the room for its examination at the manufacturing SME level. EO studies have called for investigating the operational and actionable factors that explain its link to business outcomes. Some of the studies have investigated EO and SMEs' success through mediating and moderating mechanisms (Mathafena & Msimango-Galawe, 2023), but this research stream is in the phase of infancy. Notwithstanding the underlying mechanisms linking EO and manufacturing SMEs' success in South Africa are still scant. Investigating IEO is specifically pertinent in manufacturing SMEs of South Africa since they are more dependent on the owners' decision-making compared to large-scale production units. Yet, most of the studies still focused on large firm-level EO.

Although numerous entrepreneurial aspects exist, such as entrepreneurial management, entrepreneurial leadership, adaptability, risk management, and other supporting entrepreneurship functions, this study focuses exclusively on the EO function. This preference is supported by Kim and Hur's (2024) suggestion that EO is the most appropriate aspect influencing the operational functions, processes and systems essential for boosting business performance among the available entrepreneurial functions. Consequently, the subsequent measure of entrepreneurship efforts is more excellent business performance (Dwikat et al., 2022). Therefore, it is imperative to conduct this study to gain insight into the impact of EO on operational efficiency and business performance of the manufacturing SMEs in South Africa, paying particular attention to the Gauteng Province.

1.3. Research objectives

The main objective of the study is to examine the influence of entrepreneurial orientation on operational efficiency and performance in South African manufacturing SMEs. The following theoretical objectives have been developed for the study:

1) to provide a theoretical overview of the following entrepreneurial orientation variables: proactiveness, risk-taking, innovativeness, competitive aggressiveness, and autonomy
2) to provide a review of the literature on operational efficiency and
3) to conduct a literature review on business performance

1.3.1 Empirical objectives

1) to determine relationship between entrepreneurial orientation practices and operational efficiency
2) to establish the relationship between operational efficiency and business performance of manufacturing SMEs in South Africa

2. Literature Review

2.1 Manufacturing SMEs

Manufacturing SMEs are defined as small businesses that convert or transform raw materials or combine other products to produce finished goods that are essential and needed by customers and other organisations for their operations (Kim & Hur, 2024). In South Africa, manufacturing SMEs are

considered established businesses, listed and mainly operating in a particular business location with a range of five to 100 paid employees performing their duties at that permanent business premise (Ramsuraj, 2023). Peter et al. (2023) assert that manufacturing SMEs lean towards displaying complex business practices. Manufacturing SMEs are owned and managed with pure and robust reporting structures, regularly compliant with legislation and the law (Makanyeza, Mabenge & Ngorora-Madzimure, 2023). Furthermore, they resemble large businesses in terms of structures and exhibit a composite business arrangement with complex business practices (Chipambwa et al., 2023).

2.2 Entrepreneurial orientation

Entrepreneurial orientation has five constructs: proactiveness, risk-taking, innovativeness, competitive aggressiveness, and autonomy. It is an entrepreneurial mode that influences strategy-making to seek new opportunities as it leaps forward in uncertainty to achieve organisational goals (Ringo et al., 2023). It is also characterised as the mindset of the entrepreneur who seeks to take calculated risks and be proactive in decision-making (Kim & Hur, 2024). It also relates to how competitively aggressive the SME is to its competitors in the marketplace (Alam et al., 2022). This study considers five entrepreneurial orientation practices. These are proactiveness, risk-taking, innovativeness, competitive aggressiveness, and autonomy. Proactiveness is an opportunity-seeking, forward-looking perspective characterised by introducing new products and services ahead of the competition and acting in anticipation of future demand (Ringo et al., 2023). Innovativeness pertains to something new or improved done by the organisation, adding value to the organisation and the customer (Abuzaid, 2017). Competitive aggressiveness refers to the type of power organisations need to compete among rivals (Alam et al., 2022). Autonomy pertains to a person's ability to make independent, unforced decisions based on a rationale (Kim & Hur, 2024).

2.3 Operational Efficiency

Operational efficiency (OE) is a multi-dimensional construct measured through the productivity, efficiency, and effectiveness of the business' operations (Al-Hakimi et al., 2023). The term operational efficiency is dualistic in composition, and to fully comprehend the concept, one must look at each word individually and separately. Operations means working on ongoing tasks and processes, which include transforming resources into desired goods and services or outputs that deliver or create value for customers. On the other hand, operational efficiency is viewed as maximising a specific outcome for a given cost or minimising cost for a given outcome (Erasmus et al., 2019). Efficiency measures whether resources are used to get the best value for money (Hwang & Kim, 2022). Therefore, after combining these two terms, operational efficiency refers to a concept which measures the use of resources to maintain productivity, efficiency, and effectiveness of business operations (Musah, Kong & Mennsah, 2019). Besides, operational efficiency involves several techniques and strategies adopted to provide quality goods and services to customers in the most cost-effective and timely way (Musah et al, 2019). Operational efficiency is thus central to the growth and sustainability of an organisation. Thus, in this study, the adopted definition of operational efficiency is that resources must be allocated to maximise benefits accrue to all the stakeholders, using resources to maximum advantage (Hwang & Kim, 2022).

2.4 Business performance

Every business aims to profit and grow (Menne et al., 2022). Financial performance is an independent measure of how well an organisation can use its assets to generate income and profits (Roffia et al., 2022). The term is also used to measure an organisation's complete financial well-being over a given period. Cicea et al. (2019) present that financial performance is an essential measure of the success of any organisation. It can be summed up in three perspectives: earn, secure revenue, profit, and increase sales (Susanto et al., 2023). Consequently, it is essential for manufacturing SMEs to improve their entrepreneurial orientation and operational efficiency to boost their profitability. Non-financial performance measures (NFPIs) are metrics of how well an organisation realises its strategic goals, such as customer satisfaction, innovation, quality, or good reputation (Susanto et al., 2023). Espino-Rodriguez and Ramirez-Fierro (2018) note that one of the main benefits of using non-financial performance measures is that they help track business performance. For example, if the HR team overspends, NFP metrics can reveal this issue and may highlight high staff turnover rates as the cause

(Menne et al., 2022). Thus, manufacturing SMEs must assess their financial and non-financial performance and operational efficiency and associate the objectives with entrepreneurial orientation practices.

3. Research Methodology

3.1 Research design

This study employed a quantitative approach and a cross-sectional survey design to collect data since it was intended to test associations between the selected constructs. Thus, the rationale behind this choice was that the investigation was predictive and causal as it tried to explain the relationships among research constructs

3.2 Sampling method, Population and Sample size

In this study, the non-probability sampling method was used. As well, non-probability sampling allows for the inclusion of multiple heterogeneous data sources, which is important in the era of big data. Getting responses using non-probability sampling is faster and more cost-effective than probability sampling because the sample is known to the researcher. Respondents were selected using the purposive sampling technique to ensure that only individuals with the desired information and knowledge were involved in the study. The application of purposive sampling in this study made the data collection process simpler, and easier and facilitate savings in terms of the costs and time of conducting the stud The target population for this study was the managers and owners of manufacturing SMEs in the Gauteng Province of South Africa. The justification for selecting Gauteng province is that it has many manufacturing SMEs in South Africa, and the province is the centre of local and global businesses, including manufacturing firms. A final sample size of 494 (n=494) adequately represents the selected respondents. This sample size was considered appropriate, as suggested and approved by Nayak and Singh (2021), who argue that sample sizes above 200 are suitable for quantitative studies.

3.3 Data collection procedure

In this study, data were collected using a survey questionnaire. The survey questionnaire instrument is considered less costly and efficient technique for collecting data in a structured and manageable form from a large pool of respondents, which makes it appropriate for this study (Kline, 2023). Self-completion survey questionnaires were emailed and hand-delivered to selected respondents in the Gauteng Province. Completed questionnaires were emailed back to the researchers, and some were physically collected by the researchers.

3.4 Measurement Items and data collection

The measurement scale items of the study were adapted from recognised scales in the existing literature**.** Entrepreneurial orientation practices consisting of 40 items were adapted from scales developed by Zehir, Can and Karaboga (2015). The questions measuring operational efficiency were adapted from Aydiner et al. (2019). SME performance items were also adapted from a scale developed by Aydiner *et al.* (2019). All the constructs were scaled on a seven-point Likert scale starting from "1 = strongly disagree" to "7 = strongly agree". The respondents were asked to indicate their score on the items measurement scale in this range.

3.5 Data analysis

Data were analysed using descriptive and inferential statistics. Path analysis and hypothesis testing were applied to examine the predictive relationships between dependent and independent constructs. The SMART partial least square (PLS-version 4.0) package was utilised as the data analysis device.

3.6 Conceptual framework and hypotheses development

Conceptually, the study examined the influence of five EO predictor variables on SME performance: proactiveness, risk-taking, innovativeness, competitive aggressiveness, and autonomy. This is illustrated in Figure 1.

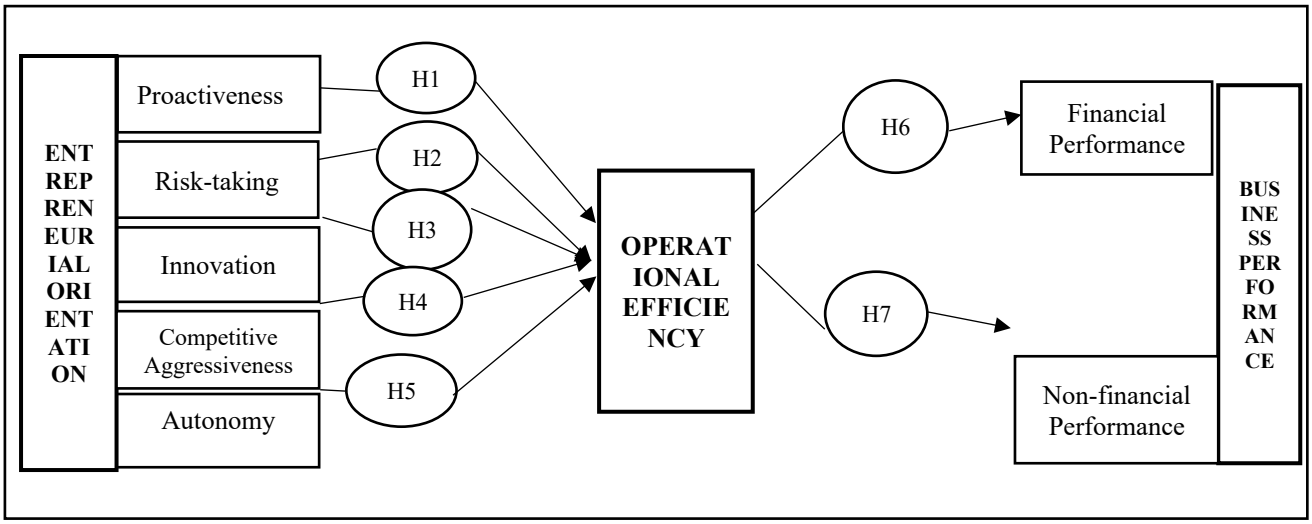


Figure 1: Conceptual framework model of the relationships between entrepreneurial orientation practices, operational efficiency and business performance
Source: Authors' compilation

Proactiveness and operational efficiency

Proactiveness is pursuing new prospects in the market, anticipating future market demands and opportunities, exploring new markets, adapting to new environments, and presenting new products, brands or services before rival contenders (Zehir et al., 2015). It is regarded as an opportunity-seeking, forward-looking perspective characterised by presenting new products and services before competitors and acting in anticipation of future demand (Kljucnikov, Civelek, Cera, Mezulanik & Manak 2020). Proactiveness reflects an action orientation with a forward-looking perspective reflected in actions taken in anticipation of future demand (Pertheban et al., 2023). Proactiveness is not just related to current business activities but is a combination of the current and the future (Meekaewkunchorn *et al.,* 2021). Several studies have revealed that proactiveness, agility and responsiveness are part of EO practices that lead to SME operational and financial performance (Karami & Tang, 2019; Pertheban et al., 2023; Pulka, Ramli & Mohamad, 2021). Moreover, Mantok *et al.* (2019) indicate that proactiveness is significantly linked to customer satisfaction and product quality. Proactive organisations are more likely to initiate the development or discovery of new attributes that create greater value (Lee *et al.,* 2019). Jones *et al.* (2019) confirm that proactiveness is significant regarding market orientation. Based on these discussions, it is hypothesised that:
H_1: *Proactiveness exerts a significant positive influence on the operational efficiency of South African SMEs*

Risk Taking and operational efficiency

Taking a risk can amount to a benefit (opportunity) or a shortcoming (threat), which causes the success or failure of the business, respectively. Risk-taking is the preparedness of a business owner to earmark new resources for ventures where the failure rate of similar ventures may have exceeded the success rate (Adegbuyi et al., 2018). According to Crovini, Santoro and Ossola (2021), risk-taking also implies committing resources to projects where the outcome is unknown. Also, Adegbuyi *et al.* (2018) submit that there is a positive relationship between risk-taking and operational and financial performance in organisations. Green (2019) also established that risk-taking has a positive significant influence on business sustainability. Correspondingly, Shaher and Ali (2020) approve that risk-taking has some significant positive effect on innovation performance. Again, Al-Shami, Alsuwaidi and Akmal (2022) indicate that risk-taking positively impacts innovation performance. Therefore, it is hypothesised that:
H_2: *Risk-taking exerts a significant positive influence on the operational efficiency of South African SMEs.*

Innovativeness and operational efficiency

Innovativeness elucidates a business' proclivity to test new ideas to activate a process whose result is new products, services, or technological developments (Nguyen *et al.,* 2021). Neneh and Van Zyl (2017) consider innovativeness as an organisation-wide strategic approach that comprises aspects such as an embedded cultural disposition, agility, flexibility, market responsiveness, commitment, and technological capability to formulate new ideas that enable creativity and deliver an excellent advantage. Innovation is the precise instrument of entrepreneurship used by entrepreneurs to lead change as an opportunity for a novel product or service (Uchenna, Sanjo & Joseph 2019).). Empirical evidence indicates that innovativeness as a variable of EO has a positive significant impact on the performance of manufacturing SMEs (Chienwattanasook & Jermsittiparsert, 2019; Al-Shami et al., 2022; Adam *et al.*, 2022). Another study by Rafiki, Nasution, Rossanty and Sari (2021) revealed that innovativeness has a positive effect on firm growth. Therefore, based on the above discussion, it is hypothesised that:

H_3: *Innovation exerts a significant positive influence on the operational efficiency of South African SMEs.*

Competitive aggressiveness and operational efficiency

Competitive aggressiveness refers to the force and exertion businesses confront and outdo competitors and contest the marketplace to entice customers into buying their marketed goods or services, thereby augmenting their market position (Kiyabo & Isaga, 2020; Magaji, Baba & Entebang, 2017). Various studies establish that competitive aggressiveness is positively associated with a cost leadership strategy in small firms, leading to operational efficiency (Handoyo et al., 2023; Kakeesh et al., 2023; Magaji et al., 2017; Paulus & Hermanto, 2022). A study by Moreover Hossain and Asheq (2019) posits that competitive aggressiveness as a variable of EO is significantly correlated with manufacturing SME operational performance. Furthermore, Kiyabo and Isaga (2020) confirmed that competitive aggressiveness positively and significantly influenced SME operational performance. Therefore, deducing from the literature, it is hypothesised that:

H_4: *Competitive aggressiveness exerts a significant positive influence on the operational efficiency of South African SMEs.*

Autonomy and operational efficiency

The independence or autonomy is a crucial part of entrepreneurial orientation (Kamendi, 2016). Autonomy is achieved when a group or individual decides freely and independently to introduce a new concept, product, or service to the marketplace. Rahaman et al. (2021) opines that managers and entrepreneurs hold the key to making decisions, and as such, they only trust themselves to ensure the business triumphs. Past empirical evidence confirms that autonomy enjoyed by manufacturing SME managers and employees leads to productivity, swift decision making and efficiency in the manufacturing processes as bureaucratic bottlenecks are reduced (Hossain & Asheq, 2019; Lee, 2021). In support, Hossain and Asheq (2019) revealed that autonomy as a variable of EO is significantly correlated with SME firm performance. The results of a similar study by Lee (2021) also confirmed that autonomy is significantly associated with training transfer, which leads to SME performance. On the other hand, Setyaningrum, Khalid and Susilo (2023) argue that too much independence and autonomy can stifle productivity as internal controls may not be considered in the process. According to Lee (2021), holding managers accountable may be difficult in a company setting and may adversely affect production, encourage people to try out, and yet "demand" results. Therefore, deducing from the literature, it is hypothesised that:

H_5: *Autonomy exerts a significant positive influence on the operational efficiency of South African SMEs.*

Operational Efficiency and Financial Performance

Every business aims to sustain itself, grow and make a profit. Financial performance is an essential yardstick for the success of any business. Adam et al. (2022) postulate that operational efficiency leads to profitability in organisations. In support, Megeid, Abd-Elmageed and Riad (2020) revealed a positive significant relationship between operational efficiency and financial performance. This resonates with the outcomes of a similar study conducted by Fazal, Muhammad and Zahoor (2020), which revealed that operational efficiency has a statistically significant association with return on assets (ROA). Lotto (2019) also reported a statistically significant relationship between bank

profitability and operating efficiency. Drawing on the conclusions of research covered in the reviewed literature, it is hypothesised that:

H6: *There is a significant positive relationship between operational efficiency and the financial performance of South African SMEs*

Operational efficiency and Non-Financial Performance

According to Adam *et al.* (2022), organisational performance refers to a company's results measured against its strategic goals. Previous studies reported that operational efficiency enhances non-financial performance, such as supply chain agility, customer satisfaction, market responsiveness and customer retention (Mjongwana & Kamala, 2018; Dobrovic et al., 2018). The results also align with other studies, which revealed that operational efficiency enhances the non-financial performance of SMEs. Furthermore, Fazal et al. (2020) posit a positive and significant influence between operational efficiency and customer satisfaction in the retail industry. Drawing on the conclusions of research covered in the reviewed literature, it is hypothesised that:

H7: *There is a significant positive relationship between operational efficiency and the non-financial performance of South African SMEs*

3.7 Ethical considerations

The following ethical considerations were observed in this study: Clearance to conduct the research was obtained from the Central Research Ethics Committee at Vaal University of Technology; Academic and non-academic staff who were involved in the study were those who were requested and willing to participate in the study; Respondents participated in the study at their convenience; The study also ensured privacy, informed consent, confidentiality, and anonymity of the respondents; and the data was analysed according to the objectives of the study. Anonymity and confidentiality of the respondents were maintained by ensuring that no names or other identities of these respondents were required on the questionnaire. Therefore, all essential research ethics were considered, and the university approved by providing the following Ethics Reference Number: FRECMS: 18032020-033.

4. Results and Findings

4.1 Response rate

The response rate for this study is presented in Table 1.

Table 1: Response rate

Description	Frequency
Total number of questionnaires distributed	600
Total number of questionnaires returned	567
Total number of questionnaires not returned	33
Unusable responses discarded	73
Valid questionnaires retained	494
Response rate percentage	**82.3**

Source: Author's compilation

Table1 displays the total number of questionnaires distributed, returned, discarded, and retained during the survey and data-capturing process. A total of 600 questionnaires were distributed. An aggregate of 494 questionnaires were suitable for analysis after confirming their validity for the study, indicating a response rate of 82.3%. The response rate is acceptable, as recommended by Coleman (2022), who proposed that a more than 50% response rate in quantitative research is appropriate.

4.2 Demographic results

Table 2 presents the demographic results that constitute the first part of the analysis of the results.

Table 2: Descriptive statistics results

Variable	Category	Frequency (n)	Percentage (%)
(A1) Gender	Male Female	290 204	58.7 41.3
Total		**n= 494**	**100**

(A2) Age	25 years and below 26-33 years 34-41 years 42-49 years 50 years and above	49 102 127 107 109	9.9 20.6 25.7 21.6 22.1
Total		**n= 494**	**100**
(A3) Race	Black White Indian Mixed Race Other	317 110 36 28 3	64.2 22.3 7.3 5.7 0.5
Total		**n= 494**	**100**
(A4) Highest qualification	Matric Certificate Diploma Degree Postgraduate Other	146 93 120 93 40 2	30.0 18.8 24.0 18.8 08.0 0.40
Total		**494**	**100**

Source: Author's compilation

The results in Table 3 indicate that males formed the dominant gender (59%; n=290) than their female counterparts (41%; n=204). The age-spread of the respondents depicts a slightly more significant share of those aged between 34-41 years (25.7%; n=127). Regarding the racial composition of the respondents, the highest percentage of SMEs in the study were black owned (64.2%; n=317). Most respondents were diploma holders, comprising 24.3% (n=120) of the sample.

4.3 Measurement scale accuracy assessment

The results for testing the measurement scales' accuracy are presented in Table 4.

Table 4: Accuracy analysis statistics

Accuracy analysis statistics

Research Construct		Cronbach's test		Rho A	CR	AVE	$\sqrt{AVE}$	Factor loading
		Item-total	α					
PRO	PRO1	0.592	0.792	0.794	0.865	0.615	0.784	0.794
	PRO2	0.805						0.795
	PRO3	0.690						0.773
	PRO4	0.511						0.775
RST	RST1	0.515	0.723	0.774	0.832	0.566	0.752	0.746
	RST2	0.655						0.793
	RST3	0.529						0.864
	RST4	0.575						0.830
INV	INV2	0.679	0.710	0.725	0.837	0.632	0.795	0.839
	INV3	0.458						0.736
	INV4	0.560						0.807
CMA	CMA1	0.823	0.730	0.729	0.832	0.554	0.745	0.713
	CMA2	0.735						0.792
	CMA3	0.670						0.785
	CMA4	0.771						0.783
AUT	AUT1	0.602	0.717	0.737	0.824	0.542	0.736	0.791
	AUT2	0.600						0.797
	AUT3	0.595						0.775
	AUT4	0.651						0.764
OPE	OPE1	0.677	0.821	0.823	0.875	0.583	0.763	0.775
	OPE2	0.674						0.799
	OPE3	0.783						0.770
	OPE4	0.708						0.735
	OPE5	0.783						0.775
FPF	FPF2	0.372	0.819	0.889	0.873	0.633	0.795	0.823
	FPF3	0.631						0.841
	FPF4	0.378						0.811
	FPF5	0.643						0.799

NFP	NFP1	0.574	0.773	0.775	0.854	0.594	0.771	0.772
	NFP2	0.628						0.750
	NFP3	0.640						0.762
	NFP4	0.706						0.799
PRO = Proactiveness; RST = Risk-taking; INV = Innovationess; CMA = Competitive aggressiveness; AUT = Autonomy; OPE = Operational efficiency; FPF = Financial performance; NFP = non-financial performance.								

Source: Author's compilation based on data analysis results

4.4 Analysis of reliability and validity

As presented in Table 3, the reliability of items was determined using Cronbach's alpha test and the Composite reliability (CR) test. Cheung, Cooper-Thomas Lau, and Wang (2023) recommend Cronbach's alpha values more than 0.7 for measuring the internal consistency of the collected data. The Cronbach's alpha test discloses that the measurement scores are between 0.710 and 0.821, confirming the collected data's internal consistency. Regarding the CR test, Coleman (2022) recommends a minimum cut-off score of 0.7 to determine the aptness of data reliability. The outcomes in Table 3 demonstrate that CR scores extended between 0.824 and 0.875, confirming that the internal consistency of data was achieved. Consequently, all measurement scales used for this study were considered internally consistent. Factor loadings and the AVE scores determined convergent validity. According to Cheung et al. (2023), factor loadings of more than 0.7 are suitable for determining convergent validity. The results show factor loading scores that range between 0.713 and 0.864, which provide evidence that the convergent validity requirements were met. Furthermore, AVE values were above the commended minimum threshold value of 0.4 (Kline, 2023), further confirming the adequacy of convergent validity.

Discriminant validity analysis related to entrepreneurial orientation

	AUT	CMA	FPF	INV	NFP	OPE	PRO	RST
AUT	**0.736**							
CMA	0.335	**0.745**						
FPF	0.135	0.195	**0.795**					
INV	0.329	0.151	0.313	**0.795**				
NFP	0.399	0.178	0.421	0.555	**0.771**			
OPE	0.488	0.285	0.443	0.487	0.727	**0.763**		
PRO	0.192	0.077	0.318	0.501	0.492	0.435	**0.784**	
RST	0.109	0.319	0.357	0.405	0.341	0.346	0.357	**0.752**

Source: Author's compilation based on data analysis results

To determine discriminant validity, correlations between constructs must be below 1.0 and less than the square root of AVE (Kline, 2023). Table 4 indicates that all inter-construct correlation scores were below the maximum threshold of 1.0. Therefore, discriminant validity was confirmed and considered suitable in this study.

4.5 Model fit analysis

The study's model fit was determined using the SMART PLS's indicators, that is, standardised root mean square residual (SRMR) and the normed fit index (NFI). The acceptable threshold values as determinants of good model fit should be between 0.08 and 0.10 for SRMR and between 0 and 1 for NFI (Holtom et al., 2022).

Table 4: PLS model fit results for entrepreneurial orientation, operational efficiency and financial performance

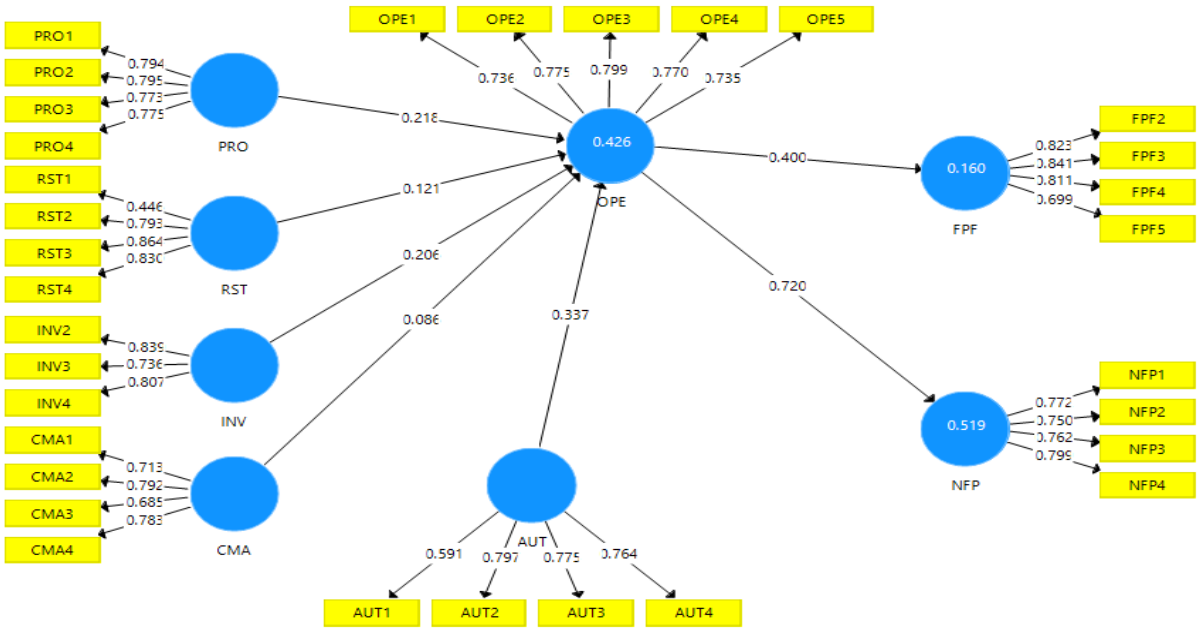
	Saturated Model	Estimated Model	Decision
SRMR	0.078	**0.089**	Supported
NFI	0.673	**0.657**	Supported

Source: Author's compilation based on the PLS output result

The results shown in Table 4 reveal that both indices thresholds are supported, with SRMS recording a score of 0.089 (≤ 0.10) and NFI obtaining a score of 0.657 (≤ 0.1), which means that acceptable goodness-of-fit is established. Therefore, it can be concluded that the data fit the model.

4.6 Path Analysis

In this study, the path analysis technique was employed to test the hypotheses based on the results obtained from SMART PLS analysis. The study applied the two main criteria under the PLS model to confirm and test each hypothesis. The first criterion included the examination of the path coefficients, represented by a beta (β) coefficient. For a hypothesis to be supported and significant, the path coefficient must be positive or negative (Coleman, 2022). The second criterion relates to the constructs' significant influence (p-value). The significant influence constitutes three levels, represented by stars, also known as p-values. The levels of influence include p-values less than 0.05. The results of the path analysis are presented in the structural model in Figure 2.



PRO= Proactiveness, RST= risk-taking, INV= innovativeness, CMA= Competitive aggressiveness, OPE1= Operational efficiency, AUT= Autonomy, FPF= Firm financial performance, NFP= non-financial firm performance.

Figure 2: Structural model of the relationships between entrepreneurial orientation, operational efficiency and performance

Source: Author's computation

The results in Figure 2 show path coefficients ranging between 0.086 and 0.720. PRO¿ = 0.218), RST (β = 0.121), INV ¿ = 0.206), CMA¿ = 0.086) and AUT ¿ = 0.337) exert positive influences on OPE. OPE has a significant influence on both FP and NFP ¿ = 0.400), and ¿ = 0.720) respectively. However, only STO does not influence OPE.

4.7 Discussion of results

The study tested a conceptual framework for implementing EO practices, operational efficiency and business performance in South African manufacturing SMEs. The results in Table 5 show that all hypotheses (H1, H2, H3, H4, H5, H6, H7, and H8) were accepted.

Table 5: Results of PLS hypotheses testing analysis

Hypothesis	Path (From-to)	Path Coefficient	T- values	P values	Hypothesis test result
H1	PRO -> OPE	0.218	4.552	0.000	Accepted
H2	RST-> OPE	0.121	2.898	0.000	Accepted
H3	INV -> OPE	0.208	4.181	0.000	Accepted
H4	CMA -> OPE	0.086	2.070	0.000	Accepted
H5	AUT -> OPE	0.337	8.003	0.000	Accepted
H6	OPE -> FP	0.400	9,359	0.000	Accepted
H7	OPE -> NFP	0.720	24.927	0.000	Accepted

Source: Author's compilation

4.8 Discussions of Hypotheses Results

Relationship between proactiveness and operational efficiency

The path analysis results, as indicated in Figure 2, indicate a significant positive relationship between proactiveness and operational efficiency (β= 0.218; t=4.552; p=0.000). These results imply that proactiveness exerts a positive influence on operational efficiency. Previous studies also revealed that proactiveness enhances the performance of SMEs (Alvarez-Torres, Lopez-Torres and Schiuma, 2019; Magaji, Baba and Entebang, 2017). The results may imply that the capability of an SME to take the first lead in activities such as implementing some strategies can have an impetus effect on its ability to produce greater outputs with minimum waste to resources, thereby increasing productivity. The strategies that could be implemented proactively include being first to launch certain products, first to enter new markets, and first to embark on a marketing campaign for a new market offering.

Relationship between risk-taking and operational efficiency

The path analysis results show a significant positive relationship between risk-taking and operational efficiency (β= 0.121; t=2.898; p=0.000). Previous studies also revealed that risk-taking significantly influenced SMEs performance (Alvarez et al., 2019; Gupta & Batra, 2015; Sanjo, and Joseph, 2019). Furthermore, Adegbuyi *et al.* (2018) found that risk-taking significantly influences SME performance. The results may imply that SMEs need to take some calculated risks to boost their operations to attain their set goals.

Relationship between innovation and operational efficiency

The results from the path analysis, shown in Figure 2, indicate a significant positive connection between innovativeness and operational efficiency (β= 0.206; t=4.181; p=0.000). These outcomes suggest that innovativeness exerts a positive influence on operational efficiency. Similar results were obtained in previous studies, revealing that a positive relationship between innovation and operational performance in manufacturing SMEs exists (Rafiki et al., 2021; Zhai et al., 2018; Zehir et al., 2015). Therefore, the result implies that innovation and adoption of new technology may enhance operational efficiency in manufacturing SMEs in South Africa. Manufacturing SMEs that embrace innovation by implementing digital marketing and advertising on all social media platforms, for example, on Facebook, Twitter and Instagram, would have an added advantage over those organisations with no social media presence.

Relationship between competitive aggressiveness and operational efficiency

The path analysis results, shown in Figure 2, indicate a partially significant positive relationship between competitive aggressiveness and operational efficiency (β= 0.086; t=2,07; p=0.039). These results show that competitive aggressiveness exerts an influence on operational efficiency. The results are supported by previous studies, which establish that competitive aggressiveness significantly impacts operational efficiency (Casillas & Moreno, 2010; Mason et al., 2015; Musawa and Ahmad, 2019). The results may mean that the SME might have a competitive approach to the market by either taking a cost leadership position or they can differentiate their products.

Relationship between autonomy and operational efficiency

Path analysis results, as indicated in Figure 2, show a significant positive relationship between autonomy and operational efficiency (β= 0.337; t=8.003; p=0.000), indicating that autonomy positively influences operational efficiency. Evidence in the literature concurs with these results in demonstrating that autonomy had a significant positive relationship with micro, small and medium enterprises (MSMEs) performance (Alvarez et al., 2019; Uchenna et al., 2019; Kamendi, 2016). The result implies that SME owners are independent and autonomous in terms of decision making; hence, they are improving their operational efficiency.

Relationship between operational efficiency and financial performance

Path analysis results indicate a significant positive connection between operational efficiency and FPF (β= 0.400; t=9.359; p=0.000), indicating that operational efficiency positively influences FPF. Previous studies support these results (Dobrovic et al., 2018; Arabeche et al., 2022). The results attest

that SMEs in South Africa are achieving a high level of return on sales, which yields a high return on investment. When processes and procedures are in place and are regularly improved, for example, the skills of employees, further reduction in wastage, and improvements in technology, operations become more efficient. For example, in responding to challenges, the organisation's financial position would change positively.

Relationship Between Operational efficiency and non-financial performance

Path analysis results, as indicated in Figure 2, reveal a significant positive relationship between operational efficiency and NFP (β= 0= 0.721; t=24.927; p=0.000), which reveals that operational efficiency positively influences non-financial performance. The results concur with the previous studies, which established that operational efficiency has a positive and direct effect on firm performance (Dobrovic et al., 2018; Mjongwana & Kamala, 2018). Operational efficiency means that resources are used efficiently with minimal defects and wastage, which reduces the cost of doing business and thereby increases profitability. Therefore, the results may imply that employees' skills must be regularly improved, as well as technology and systems, to impact the organisation's non-financial performance positively.

Conclusively, the results offer useful guidelines for manufacturing SME owners and managers on how to leverage EO activities for superior performance. Instead of pursuing high levels of innovativeness, risk-taking, and proactiveness at the same time manufacturing SMEs need to be strategic in configuring the EO dimensions to avoid overstretching the limited resources they have as well as to align the different activities with firm context. In a nutshell, our results are of interest to manufacturing SME owners and managers because the results uncover that firms can attain superior performance in multiple ways that do not always involve high levels of risk-taking.

5. Managerial Implications

This study significantly contributes to the academic body of knowledge in entrepreneurship in the SMEs sector. The literature review on OE, operational efficiency and SME performance adds useful insights for academics and researchers. The theoretical framework fusing the OE, operational efficiency and SME performance also provides useful insights for other researchers. It adds valuable knowledge on the factors that might contribute to adopting OE practices in South African manufacturing SMEs.

In effect, the study is beneficial for the SME owners in the manufacturing sector for learning and dynamically practicing the skills of EO for making their business enterprises successful. The manufacturing SMEs owners and management should actively learn, take new initiatives with calculated risks, set challenging goals and put efforts to realize them, act creatively, be competitive for materialising the operational efficiency through the adoption of EO practices. They should apply EO to investigate and test new resource combinations since only relying on the routine business operations makes the business performance stagnant or decline. By being more alert regarding the opportunities and information available regarding the operational efficiency prospects, the manufacturing SMEs owners can create, capture and experiment with the resources that are much needed for the business operations, processes and survival. The study also makes significant contributions to owners and managers of manufacturing SMEs by reiterating the challenges faced in their organisations. Then it demonstrates how the adoption of EO practices could improve their operational efficiency, while improving performance. By indicating the factors either promoting or impeding the adoption of EO practices in SMEs, the study provides managers and, owners and other decision makers in SMEs with suggestions on how to facilitate more rapid OE practices' adoption and circumvent the influence of irrelevant factors. The study also proposes a model of entrepreneurial management, operational efficiency, and organisational performance of SMEs. The research is significant as it provides new and recent insights on OE, operational efficiency, and business performance compared to the existing body of knowledge within the domain of manufacturing SME management in South Africa and other developing countries.

6. Conclusions, Limitations and Future Research

The study investigated the relationship between entrepreneurial orientation, operational efficiency, and performance in SMEs in South Africa. A quantitative methodology was used to gather the data using a questionnaire distributed to a purposively drawn sample of 494 SME owners, managers, and professional staff in the Gauteng Province of South Africa. The Statistical Packages for Social Sciences (SPSS, version 27.0) and SMART partial least squares (PLS, version 3.0) software were utilised to analyse the descriptive and inferential statistics. Hypotheses tests showed that EO, through its constructs, namely, proactiveness, risk-taking, innovativeness, competitive aggressiveness, and autonomy, significantly influences the operational efficiency of SMEs. The study also confirmed that operational efficiency contributes positively to manufacturing SMEs' financial and non-financial performance.

The current study has implications for future studies. The research study could be conducted in the future using a different methodology to the quantitative method used in this study, for example, by using a qualitative or mixed method to further analyse the constructs of both entrepreneurship orientation and management in a bid to understand further operational efficiency and performance in SMEs in South Africa. The mixed methods can offset the disadvantages of the two methodologies, thereby enhancing results validity. This could expand or further refine the study's results, which may unveil some insights that remained latent in this study. Other dimensions were also not incorporated here, such as gender participation and even age, which can be further ventilated in future studies by comparing the results of different studies. Future studies could also increase the size of the sample.

7. Acknowledgments

The authors need to acknowledge Vaal university of technology for all the support provided while writing this paper.

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