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Examining the Perceived Effectiveness of Digital Marketing Analytics on the Growth of Manufacturing SMEs in Lusaka, Zambia

A Perception-Based Analysis of Adoption, Impact and Constraints

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Abstract: Despite rapid growth in internet access across Zambia, most manufacturing small and medium enterprises (SMEs) in Lusaka have not translated this access into analytical capability. This study examines the perceived effectiveness of digital marketing analytics (DMA) on the growth of manufacturing SMEs in Lusaka, guided by the Technology-Organisation-Environment (TOE) framework and Dynamic Capabilities Theory (DCT). A descriptive-correlational, mixed-methods design was adopted, drawing a purposive sample of 70 respondents (60 owners/managers and 10 marketing officers) from registered manufacturing SMEs. Data were collected through structured questionnaires and semi-structured interviews and analysed using Stata for descriptive and correlation statistics, supplemented by thematic analysis of qualitative data. Findings show that SMEs report relying predominantly on basic tools such as social media analytics (29.0%) and Google Analytics (21.5%), with limited use of advanced or AI-based analytics (3.7%). A majority of respondents reported increased sales performance (68.6%) and improved customer engagement (74.3%) linked to DMA use, and a consistent positive perceived relationship was reported between the level of analytics use and SME growth (68.6%). However, respondents perceive adoption to be constrained by financial limitations (37.1%), digital skills gaps (31.4%), and unreliable internet connectivity (20.0%), with 60% of adopters using tools only partially. The study concludes that DMA is perceived to be a valuable driver of SME growth in this sector, but its full potential is constrained by organisational readiness rather than by the technology itself, and recommends targeted capacity building, strategic integration of analytics into planning, and improved digital infrastructure.

Keywords: *Digital Marketing Analytics; Perceived Effectiveness; SME Growth; Manufacturing Smes; Zambia; Technology-Organisation-Environment Framework; Dynamic Capabilities.*

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I. INTRODUCTION

The global digital marketing analytics (DMA) market grew from approximately US$226 billion in 2017 to over US$740 billion in 2024, expanding at roughly 15% annually [1]. Internet usage across Sub-Saharan Africa rose from 35% to 47% over the same period [2], and African SMEs that use analytics report up to 30% higher sales growth than those relying on conventional marketing methods [3]. In Zambia, internet penetration reached approximately 70% by 2025 [4], yet fewer than 40% of manufacturing SMEs in Lusaka use analytics tools, compared with roughly 60% in more digitally advanced regional markets [4]. This gap between digital access and analytical capability persists despite growing evidence that digital marketing adoption improves business performance among Lusaka SMEs [5], [6].

SMEs are central to Zambia's industrialisation, employment creation, and poverty reduction, yet manufacturing SMEs in Lusaka continue to face challenges in market visibility, customer retention, and sales growth. While institutional reports document rising digital access, there remains limited empirical evidence on how DMA is perceived to influence SME growth within Zambia's manufacturing sector. This gap constrains both policy design and business strategy, motivating the present study.

The general objective of this study is to examine the perceived effectiveness of digital marketing analytics on the growth of SMEs in the manufacturing sector in Lusaka. This is addressed through four specific objectives: (1) to establish the types of DMA tools reported to be used by manufacturing SMEs; (2) to determine the perceived effects of DMA on SME growth; (3) to ascertain the perceived relationship

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between DMA usage and SME growth; and (4) to identify the perceived limitations constraining effective DMA adoption. Correspondingly, the study tests whether a significant perceived relationship exists between DMA and SME growth, whether DMA has a significant perceived effect on growth, whether the level of adoption influences perceived growth outcomes, and whether perceived organisational limitations affect DMA use.

The remainder of this paper is organised as follows. Section II reviews the theoretical framework and related literature. Section III describes the methodology. Section IV presents and discusses the results. Section V concludes with recommendations.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

➢ *Technology-Organisation-Environment Framework*

The Technology-Organisation-Environment (TOE) framework explains why firms adopt, or fail to adopt, new technologies such as DMA [7], [8]. It identifies three contexts that shape adoption decisions: the technological context, comprising the perceived usefulness and compatibility of available tools; the organisational context, comprising firm size, financial capacity, digital skills, and management support; and the environmental context, comprising competitive pressure, regulation, and market dynamics. TOE is particularly suited to explaining Objectives 1 and 4 of this study, namely the types of tools adopted and the limitations constraining their use.

➢ *Dynamic Capabilities Theory*

Dynamic Capabilities Theory (DCT) extends the resource-based view of the firm [10] by explaining how firms convert capability into performance through the ability to sense market opportunities, seize them through appropriate resource allocation, and transform organisational structures and strategies in response to changing conditions [9]. Applied to DMA, sensing corresponds to using analytics to detect market trends and customer preferences, seizing corresponds to targeting profitable segments and tailoring offerings, and transforming corresponds to reconfiguring marketing strategy based on data feedback. DCT is therefore well suited to explaining Objectives 2 and 3 of this study, namely the effects of DMA and its relationship with SME growth.

➢ *Empirical Studies and Research Gap*

A growing body of research links data analytics capability to firm performance [11], [12], and recent systematic reviews confirm a positive association between DMA and SME performance across multiple markets [13]. Technological readiness has also been shown to shape analytics adoption among resource-constrained firms [14]. Within Zambia specifically, studies confirm both growing digital marketing adoption among SMEs [5], [6] and persistent digital skills gaps in the manufacturing sector [15], while organisational culture is repeatedly identified as a major barrier to translating data into decisions [16]. However, existing Zambian institutional reports remain largely descriptive, documenting digital access and adoption rates without empirically testing the relationship between analytics use and measurable SME growth outcomes [4], [17]. Moreover, most empirical DMA-performance studies internationally focus on services or e-commerce SMEs, leaving manufacturing SMEs comparatively under-researched. This study addresses that gap by combining TOE and DCT to empirically examine both the adoption and the perceived performance dimensions of DMA among manufacturing SMEs in Lusaka.

III. METHODOLOGY

➢ *Research Design*

This study adopted a descriptive-correlational design combining quantitative and qualitative methods [18], [19]. The descriptive component profiled the types of DMA tools in use and the limitations SMEs face, while the correlational component tested the strength of association between DMA use and perceived SME growth indicators. Because all measures were self-reported, the study captures respondents' perceptions of effectiveness rather than audited performance data.

➢ *Population and Sampling*

The target population comprised approximately 250 registered manufacturing SMEs operating in Lusaka [21]. A purposive sample of 70 respondents was drawn, consisting of 60 SME owners/managers and 10 marketing officers, in line with the Krejcie and Morgan (1970) table for determining adequate sample sizes for a population of this magnitude [20]. Purposive sampling ensured that only respondents with direct involvement in marketing and business decision-making participated.

➢ *Data Collection and Analysis*

Primary data were collected using structured questionnaires administered to all 70 respondents, supplemented by semi-structured interviews with a subset of 10 participants to enrich the quantitative findings. Secondary data were drawn from institutional reports, including those of the Zambia Information and Communications Technology Authority and the Ministry of Technology and Science. Quantitative data were analysed in Stata using descriptive statistics and correlation analysis, while qualitative interview data were analysed thematically. Triangulation across quantitative, qualitative, and secondary sources was used to strengthen the credibility of findings, and the study followed standard ethical protocols, including informed consent and confidentiality.

IV. RESULTS AND DISCUSSION

➢ *Demographic Profile of Respondents*

Of the 70 respondents, 54.3% were male and 45.7% were female. The largest age group was 30–39 years (40.0%), followed by 20–29 years (25.7%), 40–49 years (22.9%), and 50 years and above (11.4%). In terms of education, 45.7% held a first degree, 34.3% a diploma, and 20.0% a postgraduate qualification. Respondents were predominantly business owners (42.9%) and managers (34.3%), with marketing officers comprising 22.9%. Most firms had been

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operating for fewer than six years (60.0% combined for under 2 years and 2–5 years), and 54.3% employed between 11 and 50 staff, consistent with the small and medium-sized character of the sampled firms.

➢ *Types of Digital Marketing Analytics Tools Reported*

As shown in Table 1, social media analytics was the most widely used tool (29.0%), followed by Google Analytics (21.5%), email analytics (17.8%), CRM analytics (15.0%), and SEO metrics (13.1%). AI-based analytics tools were the least used, at only 3.7%, reflecting both cost and technical-literacy barriers consistent with regional evidence that African SMEs tend to adopt accessible tools rather than advanced platforms [3]. Analytics was applied predominantly to marketing campaigns (37.1%) and customer targeting (28.6%), with 40% of respondents using analytics on a daily basis. Notably, business owners themselves were the primary users of analytics (40%), rather than delegating this function to marketing specialists, reflecting the hands-on management style typical of SMEs of this size.

Table 1 Digital Marketing Analytics Tools Reported by Manufacturing SMEs in Lusaka

Analytics Tool	**Usage (%)**
Social media analytics	29.0
Google Analytics	21.5
Email analytics	17.8
CRM analytics	15.0
SEO metrics	13.1
AI-based analytics	3.7

➢ *Perceived Effects of Digital Marketing Analytics on SME Growth*

A majority of respondents (68.6%) reported increased sales performance since adopting DMA, and 74.3% reported improved customer engagement. Approximately 40% of respondents perceived between 10% and 25% of their annual sales growth as attributable to DMA, and sales revenue was the single most-cited improved outcome (37.1%). The decisions most directly shaped by analytics were adjustments to marketing campaigns (45.7%) and improved customer targeting (40.0%). These findings support Hypothesis 2 (perceived effect) and are consistent with DCT's sensing and seizing mechanisms [9]: firms that interpret analytics data are better positioned to identify and act on profitable opportunities, translating into the sales and engagement gains respondents report, consistent with prior evidence linking analytics capability to firm performance [11], [12].

➢ *Perceived Relationship between Digital Marketing Analytics and SME Growth*

Table 2 summarises the performance indicators most closely reviewed alongside analytics data. Sales figures were reviewed most often (45.7%), followed by customer acquisition (25.7%), market reach (14.3%), and online engagement (11.4%). Overall, 68.6% of respondents reported that firm performance improves as analytics use increases, supporting Hypothesis 1 and indicating a consistent positive perceived relationship between DMA usage and SME growth. Notably, 48.6% of respondents reported discussing analytics results during every planning cycle, suggesting that the strength of the relationship depends not merely on whether analytics is adopted, but on how deeply it is embedded into ongoing organisational decision-making — a pattern consistent with DCT's emphasis on organisational learning and reconfiguration [9]. Only 11.4% of respondents observed no clear pattern between analytics use and performance.

Table 2 Performance Indicators Reviewed Alongside Analytics Data

Performance Indicator	**Response (%)**
Sales figures	45.7
Customer acquisition	25.7
Market reach	14.3
Online engagement	11.4

➢ *Perceived Limitations of Digital Marketing Analytics Adoption*

Financial constraints were perceived by respondents as the single greatest barrier to effective DMA use (37.1%), followed by digital skills gaps (31.4%), unreliable internet connectivity (20.0%), tool complexity (8.6%), and insufficient management support (2.9%). Notably, 60% of SMEs that had adopted analytics tools used them only partially rather than fully, and trained personnel was cited as the most lacking resource (40%). Training was the most-requested form of support for improving analytics use (45.7%), while 22.9% of respondents felt their challenges remained largely unaddressed. Interpreted through TOE, these findings show that adoption barriers span both the organisational context (finance and skills) and the environmental context (infrastructure) [7], [8], and are consistent with prior evidence that digital skills gaps persist among manufacturing SMEs in Zambia [15] and that organisational factors, more than technology itself, most often limit the effective use of data [16]. Taken together, the results reveal a meaningful gap between adoption and effective utilisation: SMEs increasingly have access to analytics tools, but frequently lack the organisational capacity to exploit them fully.

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V. CONCLUSION AND RECOMMENDATIONS

This study set out to examine the perceived effectiveness of digital marketing analytics on the growth of manufacturing SMEs in Lusaka. The findings show that DMA adoption, while present, remains shallow — concentrated on basic, low-cost tools applied mainly to routine marketing tasks rather than integrated into strategic decision-making. Nonetheless, DMA use is associated with perceived growth: a majority of SMEs report improved sales performance and customer engagement, and a consistent positive perceived relationship exists between the level of analytics use and firm growth. The strength of this relationship, however, is uneven, depending on organisational readiness, financial resources, and the extent to which analytics is embedded into planning processes rather than used in isolation. The central conclusion is that digital marketing analytics is perceived to be a valuable driver of SME growth in Zambia's manufacturing sector, but its full potential is currently constrained by organisational readiness — financial capacity, digital skills, and infrastructure — rather than by the technology itself. Because the evidence rests on self-reported perceptions rather than audited performance records, these conclusions concern perceived rather than actual effects.

Based on these findings, the study recommends: (1) capacity building through targeted training in digital analytics for SME staff; (2) strategic integration of analytics into regular business planning rather than isolated marketing campaigns; (3) expanded government support for digital infrastructure and financial incentives for SME technology adoption [22], [23]; (4) prioritisation of affordable or free analytics platforms to ease financial barriers; (5) improved data management practices through more structured systems; and (6) stronger partnerships between SMEs and digital training hubs to build sustained capability. Future research should adopt longitudinal designs to establish causal pathways between DMA and SME growth using objective performance data, and extend comparative analysis to other sectors and provinces to test the generalisability of these findings.

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