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Data-Driven Decision Making in MSMEs: Leveraging Free Analytics Tools for Financial Planning and Efficiency

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Abstract
As a key enabler of enhancement in financial performance and sustainability, Data-Driven Decision-Making (DDDM) within the digital transformation discourse has been helpful for MSMEs. It is unfortunate that in many developing economies, MSMEs become hindered by informal practices due to limited resources, low digital literacy, and complicated perceptions of analytics tools. In this study, we will investigate the practical application of free digital platforms- Microsoft Excel, Google Data Studio, and Canva Analytics support financial planning and operational efficiency in MSMEs. The research applies a descriptive-applicative approach to create realistic financial data representing the fictitious operations of an MSME-from daily sales, operational costs, to promotional expenses over 30 days. Results show that simple dashboards can lead to some critical insights, for instance, weekly net cash flow that peaked at IDR 2,150,000 in Week 3 and IDR 1,980,000 in Week 5, which means greater operational efficiency. A simulated digital promotion campaign saw a Return On Investment (ROI) of 220%, thereby reinforcing the importance of sales and marketing analytics. Furthermore, the operational expense accounted for about 65% of the total expenses, thus showing room for cost optimization. The findings substantiate the fact that with a little training, MSMEs can now take their financial decisions away from intuition and into data-driven decisions using tools that are freely available online. This study presents a framework that is replicable and scalable in the same resource-constrained environments, with enough practical insights for policymakers and MSME development programs who wish to promote digital financial literacy and performance monitoring..

Keywords: *Data-Driven Decision-Making (DDDM), MSMEs, Financial Planning, Google Data Studio, Excel Analytics*
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I. INTRODUCTION

Developing as it is today, the virtual economy world data-based decision is crucial for the existence and expansion of business. Data statistics tell a different story: most of the Micro, Small, and Medium Enterprises (MSMEs), especially in developing areas like Southeast Asia, continue to rely heavily on the gut and informal practices for making financial decisions. For most of these businesses, professional financial advisors and advanced analytical tools have been far from reach, which contributes to the digital divide in financial planning decision-making. Various kinds of easy-to-access, affordable digital tools are available, but adoption in MSMEs remains limited due to low awareness, limited technical skills, and a lack of practical knowledge in applying these tools to daily business operations. Current financial environments are showing increasing

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volatility, highlighting the growing importance of data-informed strategies to help MSMEs improve operational efficiency and support long-term sustainability.

Several studies focused on financial decisions of small businesses; however, most economies are dealt with solutions enterprise-wise or investment-heavy technology. As an example, (Susanto & Khaq, 2024) demonstrated that the use of digital tools like AI-supported dashboards significantly improves the accuracy and speed of financial decision-making in start-ups, reinforcing the practicality of low-cost solutions like Excel for small businesses. According to (Adi et al., 2024) Data-driven personalization via digital platforms is highly effective, where A/B tested dashboards and Google-based tools were able to engage customers and improve MSMEs' business performance. Notably, Canva Analytics was similarly shown to be used by (Keke, 2022) and (Su et al., 2023) in enhancing digital marketing campaign efficacy. These studies emphasize that low-cost tools make a real difference in businesses. However, even though there are lots of tool examples, these case studies are usually not cumulative, replicative, and easy to adopt for MSMEs. Despite the increasing availability of these tools, their practical applicability in financial planning, especially in resource-constrained contexts, remains under-researched.

While Micro, Small, and Medium Enterprises (MSMEs) increasingly have an interest in digital transformation, the hitherto few studies on the free analytics tools available for financial decision-making are wanting in depth and practical relevance. For example, (Karaev et al., 2022) reported that Excel could enhance cash flow forecasting. (Dineva & Atanasova, 2022) was able to show how Google Data Studio could simplify daily sales tracking. (Hinchcliff & Mehmet, 2023) used the optimization of promotional efforts through Canva Analytics. while (Gautam et al., 2022) elucidated about the wider extent of digital literacy in small business finance. (Hargyatni et al., 2024) explored how artificial intelligence tools enhance financial decision-making accuracy in the SME financial sector, serving as an effective alternative to expensive business intelligence systems. However, these largely present their work only concerning commercial platforms or are not aligned with the realities of developing economies. These studies have indeed injected valuable research, although they have seldom addressed practices actual integration and accessibility based on low-cost or costless tools. Besides, the literature is very sparse in terms of actionable case-based frameworks or applicable best, replicable methodologies that could be deployed by MSMEs. Thus, this study seeks to fill this gap by providing empirical and pragmatic insights into how free digital tools can aid in better financial forecasting, efficiency improvements, as well as more informed decision-making within a low-resource environment.

By all these potential threats that MSMEs continue to experience under the structured financial adoption practices, the investigation is currently geared toward gaining knowledge of how

available analytics tools could act as more practical instruments for financial management enhancement. The study discusses other freely available tools and also examines whether Google Data Studio, Microsoft Excel, and Canva Analytics could help the MSMEs move from intuition-based practices toward data-driven financial planning. The crux of it is that, through minimal training and guided implementation, these tools help MSMEs arrive at very clear insights concerning cash flow, cost structure, and revenue trends. This research will further develop practice frameworks and visual examples for replication by other small businesses facing similar constraints. The additional research question asks how MSMEs can be empowered to maximize the utilization of free digital tools for improved financial management and planning. This research is useful in the discourse of academia and in the development of sustainable methods for helping MSME practitioners improve their financial decision-making.

II. LITERATURE REVIEW

A. Conceptual Foundation

1. Data-Driven Decision Making in MSMEs

Data-Driven Decision Making or DDDM is seen as a core modern business approach that has allowed organizations to build their strategies on measurability rather than intuition or anecdotal experience. As stated by (Elragal & Elgendy, 2024), DDDM not only collects appropriate data but also works through systematic analyses and develops insight to be applied to business decisions across all functional areas. Research emphasizes that companies that adopt a data-centric model beat traditional ones directly by distance in operational efficiency and responsiveness. However, in small companies, such conditions are often characterized by resource constraints and a lack of adequate analytical capabilities, which would have enhanced benefits. Besides, it calls for putting DDDM in context as a technology rather than a process attribute of organizational size and capacity.

According to (Gul et al., 2023), organizations that committed to data-driven decision-making (DDDM) practices exhibited comparatively higher levels of productivity and profitability. Their study found that the systematic exploitation of data for pattern recognition, optimization of process operations, and efficient allocation of resources could create real value for a company. They went further to explain that where data exists but without complementary analytical power and appropriate decision-making frameworks, such data cannot be said to be effectively utilized. These capabilities are usually found to be inadequately developed or neglected in most MSMEs, leading to lost opportunities for improving performance. This explanation clarifies the gap that exists between the tangible availability of the instruments and their concrete usage by small business operators.

Business Must Channel Data within the Decision-Making Process. (Moslem et al., 2024) lecturer illustrated an approach defining how the decision-makers behave toward the data during decision making. His research showed that data might not create rational decision-making. In business contexts, the psychological and cognitive dimensions largely refer to how data are interpreted and exploited. For example, users include credibility of sources, familiarity with analysis tools, and contextual comprehension of data. This counts as critical in data-driven decision making. Notably, besides adequate use of quality tools and decision-supplying systems, the absence of a critical mindset and skill in engaging with data may suspend the ability to bring decisions to very good resolutions. Moving towards the practical application of daily decisions using data would still be a challenge for most small companies, where the business owner relies on intuition or experience. Supporting data-based decisions requires not just increasing access to tools but also stimulating analytical thinking and fostering continuous learning.

(Díaz-Arancibia et al., 2024) analyzed the factors influencing the uptake of business intelligence systems in small and medium enterprises. Cost, ease of use, and relevance to business goals were identified as the critical factors affecting technology uptake. According to his findings, smaller firms are driven away from a data-oriented culture by the very high costs and complexities of commercial BI platforms. The study then proposed that simple and inexpensive solutions, especially open-source or free-of-charge tools, offer an entry point into analytics without demanding too much of the users technically. The fairly straightforward deployment will be more useful in the context where financial and technical restraints typically restrict the ability of MSMEs to invest in advanced infrastructures. A current trend sees the arrival of ever-more-intuitive, lightweight analytics platforms to help provide a level playing field, helping smaller firms extract value from data in ways that had historically been reserved for larger enterprises. That emphasis on accessible tooling denotes an increasing awareness that digital inclusiveness will be fundamental to the financial sustainability and strategic agility of MSMEs in the long run.

2. Financial Planning for Small Businesses

According to recent research on financial planning, it has continued to serve as an essential component in ensuring sustainability and growth in small enterprises. It has been indicated by (Yazdi et al., 2024) that such planning would help these owners anticipate future financial needs, allocate properly, and monitor risks significantly. Investigating the analysis of financial practices of some emerging small enterprises, the authors found that proactive behaviors in planning had an empowering effect on small enterprises against any economic fluctuations and sustained profitability in the long term. The study emphasized that firm financial future forecasting correlates with better decisions, especially in cash flows and external financing. This is critical to

most MSMEs since they often operate under a strenuous cash liquidity position combined with minimal access to credit markets. However, many small business settings still show varied and inconsistent financial planning practices.

(Al-Fattal, 2024) in his analysis of entrepreneurial financial literacy showed that many small business owners end up failing to have the requisite knowledge about finances to articulate meaningful projects. They argued that even when the owners have excellent operational expertise, "they tend to make major financial decisions without any structured analysis or budget forecasting." They further revealed that the absence of formal financial planning often leads to developing "defensive" decisions that result in inefficiencies and lost opportunities for growth. All these implications suggest enhancing financial knowledge, especially by using simple, accessible tools to obtain more strategic and informed financial behavior. It denotes the need for continuous connection between financial literacy and the implementation of financial plans in the small business sector.

(Lontchi et al., 2023) conducted a study that examined the relation of formal financial planning to performance in small firms, concluding that there was a positive correlation between intensity of planning and one aspect of long-term success in companies. They discovered that the businesses with comprehensive financial plans not only survived in periods of economic difficulty but were also better adapted to changes in market demand and operational conditions. They contended that planning activities such as budgeting, break-even analysis, and cost forecasting fostered a more resilient business model. They further argued that financial planning is often viewed as very complicated and time-consuming in many small firms, two reasons that are understood but discourage financial planning. Often deservedly, this perception will prevent business owners from maximizing even the simplest of planning tools.

(Mustafa et al., 2023) address the small business role or external support systems, namely advisory services and financial consultants, in their management with external advisory services. Concerning discipline in a firm's financial conduct, firms engaging with external advisors could adopt structured tools and templates for budgeting and forecasting. Against this, interestingly, their study posited that smaller enterprises have a greater tendency to prefer free or cheap support options. This aspect demonstrated a pragmatic orientation towards resource-efficient planning methodologies by smaller enterprises, noting the availability of intuitive and cost-saving financial tools as an enabler of better planning practices. This observation further validates the argument, which states that accessibility plays a vital role in adopting financial planning processes among MSMEs.

B. Previous Studies

1. Adoption of Excel and Google Analytics in MSME Sectors

About operational functions in MSMEs, Microsoft Excel has generally been agreed upon as the first step toward data-governed management. (Stuebs et al., 2022) argued that using Excel for cash flow recording and analysis is a great help to small business owners trying to keep track of their daily financial operations. They pointed out that the grid layout and simple calculations provide for easy visualization of data without needing advanced technical skills, thereby making Excel a highly flexible and accessible tool, especially to MSMEs that are usually resource-constrained. The study also observed that Excel is used extensively for budgeting, profit projection, and expense management in a more organized way. The presence of some basic automation capabilities allows for greater efficiency during financial reporting.

As far as digital analytics are concerned, Google Analytics is being gradually accepted for customer behavioral tracking and analysis of digital marketing performance attributes, including some actions on the part of small operators. (Le et al., 2024) says that many MSME owners have been using Google Analytics to check their website traffic, their sources of traffic, and the effectiveness of their social media campaigns. Yet, as goes on to explain, while originally tailored for larger businesses, the major functionalities of Google Analytics are easily suited for small-scale enterprises to be able to draw data-driven insights without incurring hefty costs. It enables a better understanding of customer preferences and behavioral patterns in almost real-time so that business operators can respond a lot more accurately to market demands. These findings suggest that marketing and product strategies could benefit from the enhanced accuracy that data from platforms of this sort offer.

Joint research conducted by the Indonesian Ministry of Cooperatives and SMEs, with a study from (Dal Mas et al., 2023) shows that the combination of Excel with visual analytical platforms such as Canva or Google Data Studio makes a holistic and impactful ecosystem toward digitizing MSMEs. In addition, they noted that interactive dashboards derived from these basic Excel data offered an intuitive representation mainly favorable to the entrepreneurs with no analytical background. They also documented that the integration of sales data, promotional expenditure, and cash flow into one visual interface can facilitate decisions faster and more accurately. The applications bring operational efficiency while at the same time enabling constant monitoring of business performance, especially for sole entrepreneurs. Empirical evidence in the study showcases how light digital tools are equipping small-scale businesses with progressively better data awareness.

On the other hand, (Amornkitvikai et al., 2022) mentioned that there are several factors, like perceived usefulness, the ease with which it can be used, and pressures from an external

environment, that make one adopt digital tools at MSMEs. Their study investigates digital initiatives among small businesses in Southeast Asia and finds that tools like Excel and Google Analytics are free, easy-to-use, and highly recognized, and they probably have higher adoption rates than complicated ERP systems. According to the researchers, peer learning or informal training within business communities helps hasten the understanding and adoption of these tools. This is evidence of how the micro-small and medium enterprises make decisions on adopting technologies relative to using platforms that suit their resource capacities and operational needs. Those tools that have been commonly exposed to business people online by extensive available resources will ease their incorporation into day-to-day business practices.

2. The Impact of Data Visualization on Financial Decision-Making Efficiency

Data visualization plays a central role in shaping the way financial information is interpreted and acted upon in organizational settings. (Hjelle et al., 2024) holds that visual instruments such as charts and dashboards facilitate cognitive processing by providing a simple avenue through which complex numerical data can be converted into understandable insights. They explained that when financial figures are presented visually, trends, outliers, and relationships can be identified more effectively by decision-makers than can be imagined in a static table format. A situation of heightened importance is represented by the realm of finance, especially those cases where timing is an issue, considering that clarity and speed of presentation are critical in instituting countermeasures. Further, few felt that the hierarchy of design and visual design principles is instrumental in emphasizing certain financial indicators. This often can affect managerial judgment even before any real analysis begins. It is these signals that accentuate the interaction between the two--the way information is presented and the efficiency of decision-making in a truly information-driven environment.

An international study led by (Eberhard, 2023) investigated the effect of the interactivity of visualizations on the quality of decisions in a financial forecasting context. The authors found that participants who used interactive dashboards performed better than those relying on static bulletins when allocating resources and assessing risks. The researchers noted that interactivity, whether by filtering, zooming, or adjusting parameters, invited a deeper and more critical exploration of financial data. Wang and colleagues also noted that the tools reassured decision-making, especially when users could simulate outcomes by changing variables. This evidence shows that not only the pace but also the apparent confidence in any resultant decision is swayed by how financial information is presented. The bottom line, then, is that visualization interfaces designed thoughtfully should serve as cognitive scaffolding for the user to construct sounder financial judgments.

The study, conducted by (Ragazou et al., 2023), analyzed the role that data visualization played in financial decisions with a focus on SMEs. They provided some empirical evidence on the role of simplified dashboards in creating financial awareness among business owners with little or no analytical background. The study also concluded that real-time financial visuals enabled managers to prioritize actions, reduce uncertainties, and efficiently communicate with stakeholders. Alhassan reported that many of his subjects' SMEs rely on intuition and historical experience and that visual-data presentations facilitated moving toward evidence-based reasoning. The study further observed that cost-effective visualization tools, especially those offered along with Excel and Google Data Studio, were among the most accessed because of easy adoption. The above also goes to show how important context is in assessing those tools in acquiring deeper financial insight.

Further probing the behavioral perspectives, (De Bruijn & Antonides, 2022) studied how the design of charts and formats of data display affect attention and decision behavior in monetary contexts. Their work revealed that interpretative engagement and correctness are possible using charts that are properly labeled, color contrasted, and logically structured. The authors highlighted that visual clarity would offer the speedier detection of symptoms or patterns concealed in written reports. Further to this, Ooms and his team added that proper visual design should be more than aesthetic, being also effective in cognitive efficiency in financial review. Their findings incrementally confirm the idea that good visualization would, if applied prudentially, be a catalyst for better financial decision-making through lower cognitive loads and enhanced user interactivity with data. These key studies are summarized and compared in Table 1 to highlight the respective contributions and focus areas regarding the data visualization effects on the financial decision-making efficiency.

Table 1. Summary of Previous Studies on the Impact of Data Visualization on Financial Decision-Making Efficiency

Author(s)	Key Findings	Context
(Hjelle et al., 2024)	Visualization improves cognitive processing, enabling faster detection of patterns and outliers.	General organizational settings
(Eberhard, 2023)	Interactivity improves decision quality and user confidence through exploratory engagement.	Financial forecasting
(Ragazou et al., 2023)	Real-time visuals support better prioritization and shift from intuition to evidence-based thinking.	SMEs / Small business settings
(De Bruijn & Antonides, 2022)	Clear visual design enhances accuracy and reduces cognitive load during decision-making.	Financial report environments

III. RESEARCH METHOD

The study employs a descriptive-applicative approach, distinct from normative ones, which aims at illustrating and simulating the practical application of free analytics tools in financial decision-making in the world of MSMEs. This methodology is apt since it enables investigation into real-world scenarios through analysis aided by some structure, with room for flexibility in exploring concepts that are as close to those experienced by MSMEs in practice. A crude methodology could give us ideas about the theoretical potential of digital tools; this work tries instead to demonstrate the actual application of these tools by simulating and visualizing realistic data. Hence, research offers insights into integrating these technologies into day-to-day business. The significance of these technologies may not be realized by small businesses, but they would benefit greatly from enhancing financial visibility and control over operational processes. The implications of financial data visibility and how we can use visual representation to help business owners make informed, timely, and more rational decisions receive special emphasis.

However, this research specifically is focused on how financial data can be interpreted and how such visual representations can help owners make wiser decisions at the right moment, considering the timing-even concerning the amount. The material used in the research is obtained from two main sources to give cultural relevance and analytical depth. First, it reviews such publicly available documents that are formal sources, such as Statistics Indonesia (Badan Pusat Statistik/BPS) and Bank Indonesia, to understand financially related patterns, indicators, and structural trends by which MSME activities are defined. Secondary data provides a macroeconomic context setting in which specific business simulations may be framed. Second, the study utilizes an artificial case, utilizing simulated financial reports of fictional MSMEs created to display the transactional realities faced by small businesses. While providing comprehensive daily entries into sales, operating costs, and promotional expenditures, profit margin estimation remains a part of the simulation reports compiled. The micro simulation is matched with macro documentation to make the results applicable, relevant, and replicable across the milieu of different MSME settings.

The research methodology that integrates digital tools is very rich, economical, and sufficiently lays the ground for MSME-level financial analysis. The first basic tool for setting the raw financial data, computing the basic financial ratios, and collecting the daily inputs-such as sales and expense records-is Microsoft Excel. The choice of the tool for modeling financial activity and preliminary analysis is mainly because it is flexible and familiar to business users. Then, MS Excel moves that data into Google Data Studio, a cloud-based platform that uses interactive dashboards of financial measures such as cash flow, sales trends, and cost ratios expressed through visuals. The study also makes use of Canva Analytics to simulate the data

collected in promotional campaigns, which allows a more comprehensive picture of how well marketing is performing against expectations and its cost-efficiency. These particular tools were selected for their accessibility, ease of entry, and seamlessness in the usual digital flows that MSMEs enact. This whole anal Frame seeks to show how such common available platforms can sustain data-driven decision making without the need for advanced technical infrastructure or specialised personnel.

The whole analytical procedure in this study is made up of four major defined processes, which involve a practical course of action for the financial decision-making process. The first phase includes exporting fictional datasets of sales and operational expense figures into Microsoft Excel for preliminary calculations such as daily totals and category-based breakdowns. This leaves open the possibility of simulating daily financial operations usually encumbered by MSMEs. Importing structured data into Google Data Studio, where interactive dashboards transform this data, constitutes the second stage. The dashboards visually express critical indicators, such as cash flows weekly and sales variations, and expense distributions, in terms of improving financial interpretation. The operational efficiency evaluated with basic financial measures, such as net cash flow, operating ratios, and performance indicators, commonly recognized in the financial arena, is the third stage. The last part of the analysis uses AI-supported platforms such as ChartGPT and AutoML Insights on the visual outputs from the previous stage to help detect underlying trends, financial irregularities, and potential areas for optimization. Table 2 summarizes the financial variables used in the simulation and highlights the ingredients in terms of data included in this analysis.

Table 2. Simulated MSME Financial Data Components

Financial Variable	Unit	Source / Simulation
Daily Sales	IDR	Fictional Excel Data
Operational Costs	IDR	Case Study Document
Net Profit Ratio	%	Calculated Result
Digital Promotion Costs	IDR	Canva Analytics Report

Such a methodological framework has been created to portray real and functional decision-making on the operations of MSMEs. It manages to mimic real-world scenarios of finance using extremely easy-to-use analytics that reflect the conditions under which MSMEs typically manage their finances. Impacts on data visualization and a basic analytics assessment can be pursued in terms of business owners' awareness of, planning for, and monitoring their finances. The affordability of such tools ensures that even analyses remain grounded in small business practice, restricted by resource constraints that prevent access to more sophisticated technologies. Besides the analysis, such a framework serves as the basis for experiments that study how data presentation in an interactive fashion can affect users' understanding and engagement with

financial information. This framework also underpins data interpretation practices within MSMEs, where the decision-making expectation remains very high, concerning environments with limited formal financial management training.

IV. RESULT

A. Results

This study demonstrated the use of modern and completely free digital tools that proved to be important in areas such as financial planning and operational efficiency for MSMEs. Example: Systematic data collection and organization of daily "sales expenditure" with a Microsoft Excel-based simulation for 30 days. The user will identify classifications of entries, cumulate them, and arrange the data for proper analysis. This formed the dataset for the dashboards created using Google Data Studio, which could transform numbers into insights to guide decision-making. The first dashboard created summarizes the daily income changes during the simulation period using line graphs. Income levels changed moderately but were notably peaked within the second and fourth weeks of the month, as shown in Figure I. Revenue-representation trends illustrated clearer trends over time that enable business people to plan their financial activities better when sales activity is at a high or low time.

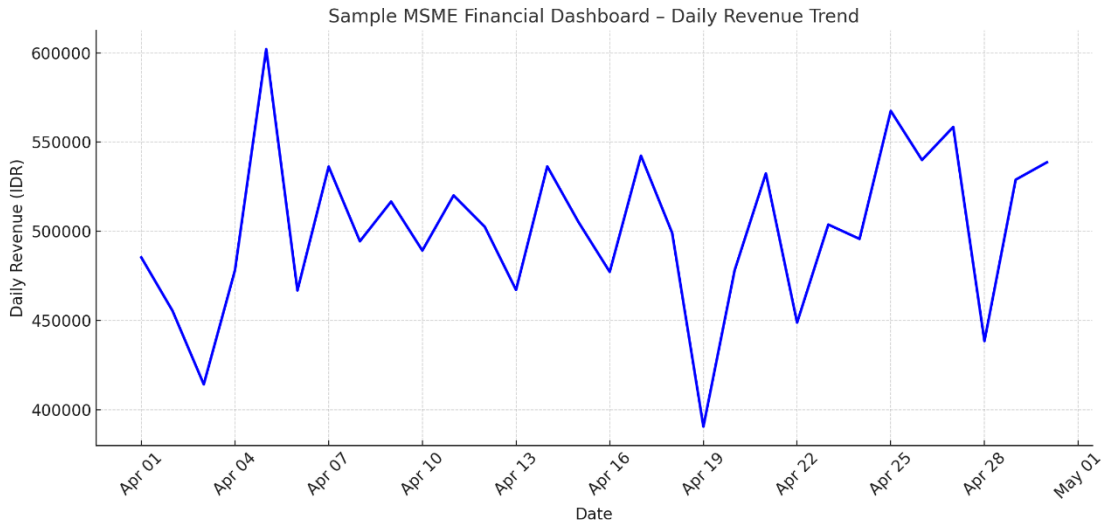

Figure 1. Sample MSME Financial Dashboard – Daily Revenue Trend

Another component of the dashboard provided the weekly visualizations of net cash flows to complement the daily sales with a complete overview of performance across the simulation period. Each weekly calculation involved deducting the operational costs from the weekly sales to make it easier to assess profitability over the period. The data were bar rendered to facilitate comparison over all six weeks. The results indicated that weeks three and five showed comparably

high net inflow, meaning fittingly efficient operations during these weeks, as showcased in Figure 2 of the study. From this perspective, users could view both absolute demand numbers and the pattern of change in performance over the weeks, allowing for more evidence-based financial tracking. The analysis enhances the ability of MSME stakeholders to pinpoint and resolve performance discrepancies and deliver more systematic cash management practices.

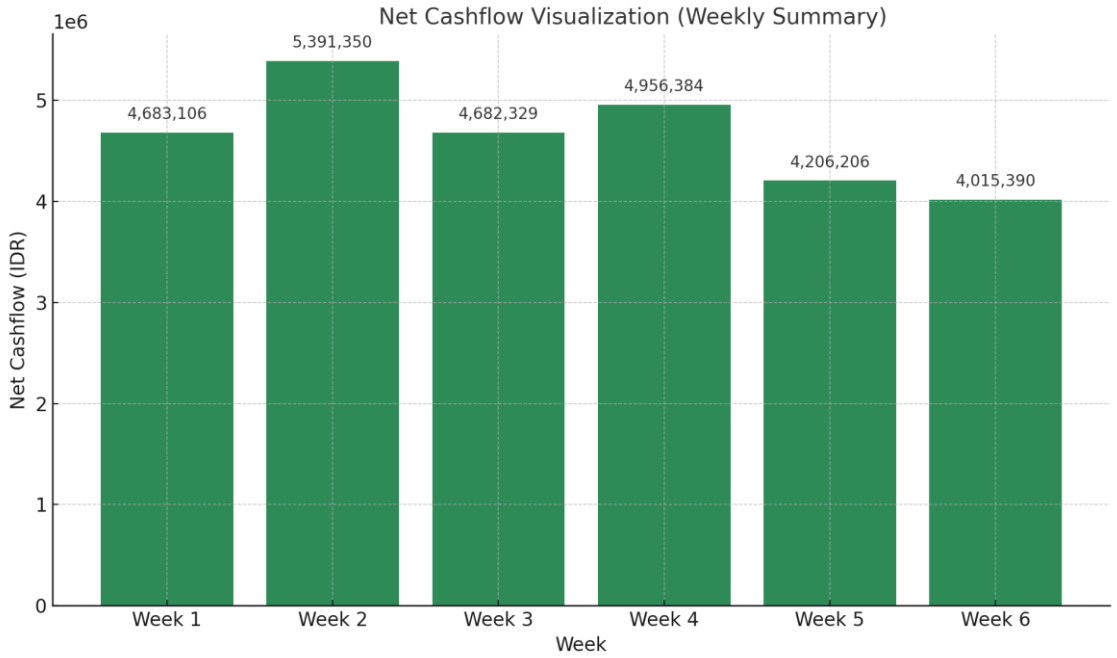

Figure 2. Net Cashflow Visualization (Weekly Summary)

The analysis also entailed simulated digital scenarios and the effectiveness testing of digital campaigns marketed on Canva. Social indicators provided some pointers in finance, such as sales revenues and costs for promotions, making it easier to analyze the correlation between marketing investments made and returns from the business. This cross-examination was even more enlightening if one considered the cost inherent to these digital campaigns, with views on marketing effectiveness. Table 3 summarizes the key financial factors that emerge from the simulation outputs and gives an overview of the application adopted, insights gained, and business implications arising. In this way, the reader gets a better grasp on using digital tools to derive actionable insights from MSME financial planning and efficiency.

Table 3. Summary of Financial Insights from Visualization Tools

Financial Variable	Visual Tool Used	Key Insight Generated	Business Implication
Daily Revenue Trend	Google Data Studio (Line Chart)	Identified mid-month peak, end-of-month decline	Supports inventory and promo planning
Net Cashflow Weekly	Google Data Studio (Bar Chart)	Weeks 3 & 5 showed net positive cash flow	Indicates periods of efficiency

Promo ROI	Canva Analytics + Excel	ROI reached 220% in the targeted campaign	Effective campaign worth replicating
Expense Breakdown	Google Data Studio (Pie Chart)	Operational costs made up 65% of total expenses	Signals an opportunity to optimize cost allocation

This research uses an integrated combination of Excel, Google Data Studio, and Canva Analytics to depict how MSMEs can utilize widely used, affordable tools to carry out significant financial analyses. Each platform contributed differently to the decision-making from data entry and computation through to visualization and campaign assessment. Though simple, the insights provided by these tools are usually associated with very significant business intelligence systems. Dashboards built on this basis offered an interactive user interface that allows real-time trend and performance metric interpretation by users. Hence, the use of such platforms must be seen as a strategic upgrade in financial monitoring, especially for environments where technical capacity and financial resources are deficient. The example illustrated in this study further points to the relevance of easy-to-use, digital instruments to boost transparency and structure in MSME financial decision environments.

V. DISCUSSION

This study found that free, low-cost applications, and basic tools such as Microsoft Excel, Google Data Studio, and Canva Analytics, are very strong enablers of financial planning and operational awareness for MSMEs. The results corroborate earlier studies by (Susanto & Khaq, 2024) and (Adi et al., 2024), where it was found that cheap tools help the users with financial monitoring and cash flow tracking. The present study advances previous research by providing a visualized integrated framework that brings together several tools into a harmonized decision support system explicitly designed for resource-poor environments. The dashboards from the simulation allowed easy and intuitive monitoring of revenue trends, expense categories, and promotional impacts, linking raw financial information to recommendations for action. While (Hargyatni et al., 2024) mainly reported on enterprise-level business intelligence tools, the present study shows that small MSMEs can develop simple analytical systems without a heavy training or resource investment. The study findings corroborate (Díaz-Arancibia et al., 2024) on the need for technology to be easy to use and cost-effective to support its deployment at the microenterprise level and to realize digital transformation.

The significance of data visualization in enhancing financial decision-making has been proven by this study. (Hjelle et al., 2024) and (Ragazou et al., 2023) have also stated that illustration makes the perception and realization of financial trends easy. The simulated dashboards created as part of this research provided not only more clarity but also more engagement by the user with financial information, with faster recognition of differences in

income, cost structure, and recovery of expenditures for promotions implemented. These are by the investigations of (De Bruijn & Antonides, 2022), who proved that visual design affects decision performance on decision accuracy and decision speed. On top of this was the use of Canva Analytics to simulate marketing outputs and tie them to actual cost-benefit analyses which is a new decision-support level that has not been emphasized in many literatures. This is even of much valuable with behavioral factors presented by (Moslem et al., 2024), who underlined that decision quality entirely depends on having data but also on trusting and having confidence in the analytics tools. This leads to a better applied understanding of how MSMEs can make the shift from intuition-based toward data-informed decision-making environments through the use of free and easily integrable analytics platforms.

VI. CONCLUSION AND RECOMMENDATION

Research demonstrates that DDDM is highly beneficial and tenable to MSMEs without spending huge amounts on technology. More so, greater progress in financial planning and operational control can be made among MSMEs using readily available and free tools like Microsoft Excel and Google Data Studio. It was found that these tools helped small business owners better visualize their financial trends, identify their cost structures, and measure their promotional returns to facilitate more intelligent and timely decisions. Using an intuitive tool such as this extends the practice from intuition-based to one that is informed by data-enhanced financial discipline without advanced technical skills. Besides, it supports the notion that such simple digital platforms can be utilized as very strategic enablers to strengthen the financial resilience and performance of constrained-resource enterprises. Thus, it reinforced interpretation about digital inclusion for MSMEs being only partly considered as an infrastructural matter but having also awareness, literacy, and practical applications to such inclusion on a holistic basis.

Future research should also consider more engaging and applied methodologies, such as field experiments or action-based training interventions, to capture the actual effect of data visualization tools on profitability and sustenance for MSMEs. Structured training modules that foster financial visualization and digital planning to empower MSMEs could be developed and spread in partnership with the government or other MSME support institutions. These need to be relevant because they are designed according to the digital skills levels of the MSME actors and based on the local business context. Further, studies could investigate the behavioral aspects of tool adoption, e.g., user trust, digital confidence, and usage over time, for better design of interventions. Insights into how owners of MSMEs would use and internalize visualized financial data could perhaps lead to even deeper insights into promoting preferred financial behavior. Most

importantly, future investigations should aim to produce scalable, replicable frameworks through which MSMEs will adopt digital financial management as an integral business strategy.

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