

Emergence of Internet Usage: Impact Analysis on the Performance of Small and Medium-sized Enterprises, a Case Study of Manufacturing Companies in Analamanga Region-Antananarivo Madagascar

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Abstract

The advent of digitization has unlocked numerous avenues for a country's economic advancement, particularly benefiting small and medium-sized enterprises (SMEs). With the ubiquitous presence of Internet technologies, the landscape has undergone a rapid transformation. Today's business environment differs significantly from both the past and the anticipated future. The integration of the Internet into business operations has spurred significant innovations across various sectors. Nevertheless, leveraging the Internet in business operations offers flexibility and substantial leeway in terms of organizational structure and management practices. However, limited financial resources pose a significant barrier to widespread Internet adoption in businesses. Additionally, coping with technological advancements remains a pressing challenge for businesses' economic development. Our research hypothesis posits that a coherent and strategic utilization of the Internet yields notable impacts on business performance. Our research aims to delineate the various ways in which businesses employ the Internet and to underscore its influence on business performance. We conducted surveys on more than 125 small and medium-sized manufacturing enterprises in downtown Antananarivo-Madagascar and its environs between 2021 and 2023. The gathered data underwent statistical analysis using SPSS and XLSTAT software

Keywords

Small and Medium-sized Enterprises (SMEs), Performance, Internet, Customers, Suppliers, and Usage.



I. Introduction

Enterprises are pivotal in propelling the economic growth and prosperity of a nation. Small and Medium Enterprises (SMEs) constitute a significant segment of the economy in developed countries (Ablyazov et al., 2018; Colovic-Lamotte, 2004). The emergence of the Internet within businesses has facilitated substantial innovations across various domains (Balagué & Fayon, 2011; Koscheyev et al., 2019; Laval, 2000; Mahmoud, 1992). Numerous

studies and research endeavors have concentrated on their utilization patterns (Amami et al., 2016; Bounfour, 2006). Impressively, digital utilization enables SMEs to enhance relationships with suppliers, local and international customers, and service providers (Brousseau & Curien, 2001; Favre-Bonté & Tran, 2013; Grandval & Soparnot, 2005). These innovations have also influenced companies in their managerial approaches and performance strategies (Brilman & Hérard, 2006; Rival, 2006; St-Pierre et al., 2005). Digital adoption has characterized the past decade by accelerating its impact and significance in improving business performance (Mebarki, 2013; Mpagang et al., 2023). The implementation of information technology in the contemporary setting reaffirms this stance (Deroin, 2010; Riccio & Bonnet, 2012). Economically, the disruption of information flows within enterprises presents both a challenge and an opportunity. A company that effectively manages this situation can benefit from increased flexibility and adaptability in its market, thereby ensuring its competitiveness.

Nonetheless, the integration of the Internet into businesses introduces both new opportunities and challenges for user companies in terms of performance and management. The lack of financial resources also presents a significant barrier to Internet usage among small and medium-sized enterprises. Additionally, technological advancements continue to pose imminent challenges for the economic development of companies. The introduction of the Internet into enterprises amplifies the instability and dynamism of the environment.

Our research aims to elucidate the utilization of the Internet within enterprises and emphasize its impact on business performance. Our research hypothesis posits that consistent and appropriate utilization of the Internet yields significant impacts on business performance.

II. Research Method

Our research focuses on the Analamanga Region, situated at the heart of Madagascar, encompassing the capital city, Antananarivo. This region hosts more than 20% of businesses in Madagascar. Our study specifically covers five districts within this region: Antananarivo Atsimodrano, Antananarivo Avaradrano, Ambohidratrimo, Manjakandriana, and Antananarivo Renivohitra. Initially, we gathered data from various sources. Subsequently, we conducted interviews with key personnel possessing the required information, such as directors and relevant staff, utilizing methods including email questionnaires and direct or semi-direct interviews (Gueguen & Yami, 2004). The majority of our inquiries were dichotomous (yes/no), while some were based on a five-point scale, and others were open-ended, necessitating detailed responses based on respondents' expertise and responsibilities. We categorized observations to group companies according to their daily Internet usage levels, employing hierarchical ascending classification (HAC). Discriminant factorial analysis (DFA) was additionally utilized to reduce qualitative variables and validate the classification based on similarities in Internet usage levels and business performance. The gathered data underwent statistical analysis using SPSS and XLSTAT software to assess the correlation and dependence between Internet usage and business performance, taking into account the nature of our data and the size of our sample.

III. Result and Discussion

3.1 Significance of the Internet for Small and Medium-sized Enterprises

This section outlines the diverse rationales and limitations influencing the utilization of the Internet by small and medium-sized manufacturing enterprises.

a. Motivations Behind Internet Adoption In Enterprises

Based on our survey findings, the reasons for daily internet usage are listed in descending order of importance, indicated by the percentage of responses for each reason.

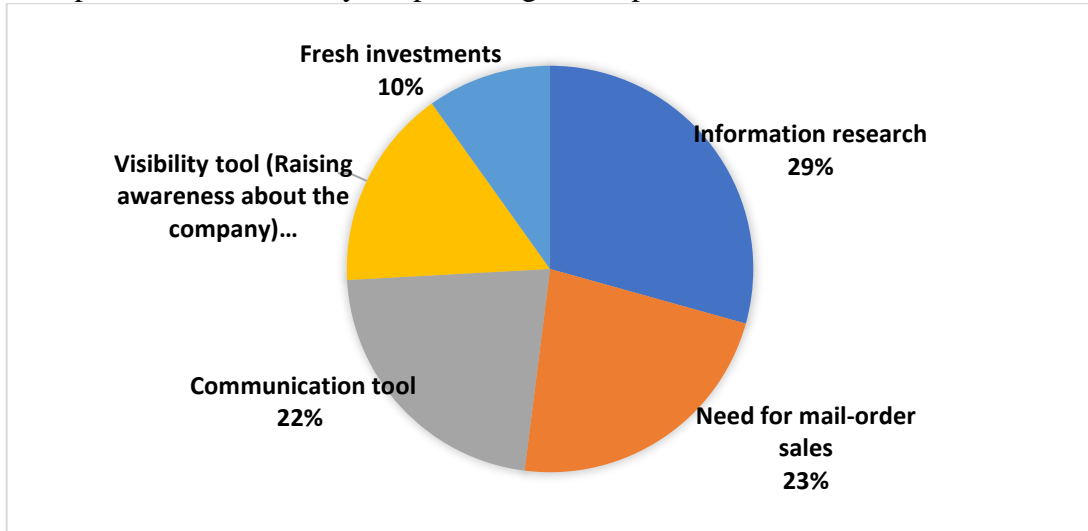


Figure 1. Characteristics of Respondents Concerning Internet Utilization Motives within Enterprises

Based on the outcomes of our surveys, multiple factors propel businesses to engage with the internet on a daily basis. A significant portion, exceeding 29% of surveyed executives, responsible personnel, and workers, affirm that the internet serves as a superior tool for information retrieval, offering cost and time efficiency benefits. Moreover, over 10% of interviewed executives and responsible personnel attest that integrating the internet into enterprises represents a strategic and forward-thinking investment, effectively addressing various contemporary needs. Furthermore, more than 23% of surveyed executives and responsible personnel highlight the internet's capacity within businesses to foster data and information exchange, facilitate mail-order sales, and showcase websites.

b. Limitations on Internet Utilization for Small and Medium-sized Enterprises

Based on the findings of our surveys, there are various constraints driving businesses to utilize the internet.

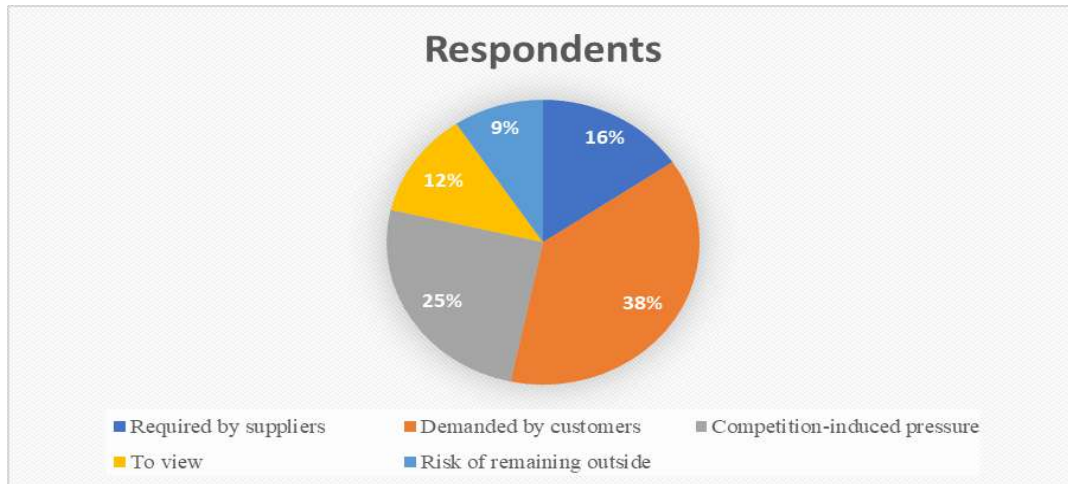


Figure 2. The various constraints of daily internet usage

Based on the findings of our surveys, the constraints on internet usage differ based on the sector of activity and the size of the companies. Our investigations reveal that more than 38% of surveyed executives and responsible personnel attribute the constraints to potential clients. Additionally, over 25% of examined executives and responsible personnel cite the proliferation of existing competitors as a significant constraint. Furthermore, more than 9% of surveyed executives and responsible personnel identify the risk of technological obsolescence as a notable constraint. These individuals argue that the adoption and utilization of the internet place businesses in the forefront of advancements.

c. Enhancing SME Performance through Diverse Internet Tools and Connectivity

Presented herein is a tabular exposition delineating the interconnectivity infrastructure and internet utilization across diverse devices within corporate entities.

Table 1. Connectivity and Internet Usage in Enterprises across Various Devices

	Minimum	maximum	mode	Number of companies	%	Minimum
Computers	1	6	3	116	92.8	1
Phones	1	8	4	125	100	1
Tablets	1	4	2	85	68	1
Having a website	1	1	1	120	96	
Executive staff	1	17	6	75	60	
Use of Facebook	1	5	10	123	98.4	
Years of internet usage	2	10	4 and 6	112	89.6	

According to the results of our surveys, out of the 125 companies utilizing these innovative tools, 55% of executives report an enhancement in their product distribution rate. Additionally, more than 65% of surveyed companies assert that their reputation and brand image have become more prominent in the market. Over 50% of companies estimate an increase in their market shares. Furthermore, more than 48% of surveyed companies indicate an improvement in their revenues and product quality. Additionally, over 45% of surveyed companies mention a significant enhancement in final outcomes through the utilization of these new innovative tools.

3.2 Establishing the Relationship between Internet Usage and Business Performance Based on Statistical Test Results

The statistical tests results indicate that internet usage at the enterprise level has a significant impact.

a. Connection between Internet Usage, Utilization Status, and Commercial Performance of Enterprises

The subsequent figure delineates various metrics encapsulating the performance of corporate entities.

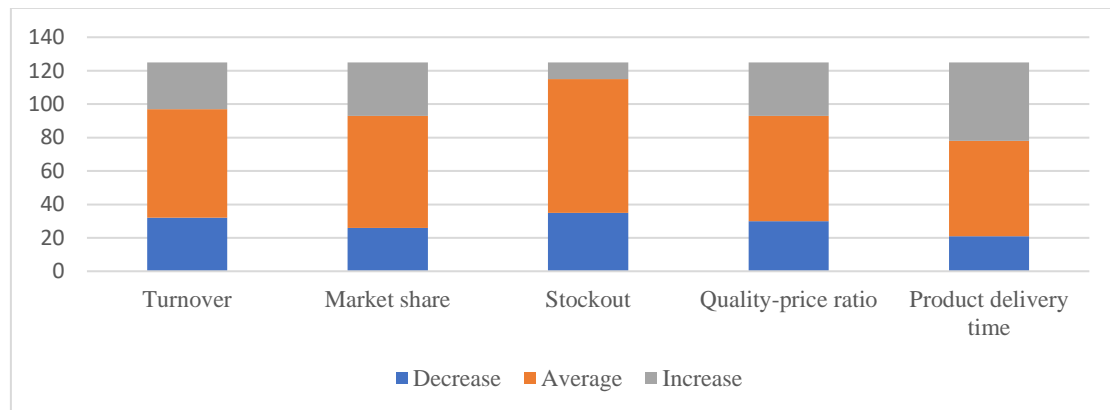


Figure 3. Different Metrics of Company Performance

According to the results of our surveys, several indicators were examined during our research, with the most crucial ones depicted in this figure. Over 32% of surveyed companies acknowledge that internet usage substantially contributes to: increased turnover, market share acquisition, decreased stockouts, and improved product delivery time. 22% of surveyed companies express uncertainty regarding whether internet usage at the enterprise level enhances business performance. Meanwhile, more than 45% of observed companies assert that internet usage indeed enhances business performance. These companies are actively embracing the utilization and exploitation of the internet in their daily operations.

b. Statistical Tests Findings

Presented herewith is a tabular representation exhibiting the outcomes derived from statistical analyses.

Table 2. Statistical Tests findings

		Value	Approximate significance
Nominal by Nominal	Cramer's V	0.384	0
Nominal by Nominal	Cramer's V	0.382	0
Nominal by Nominal	Cramer's V	0.359	0
Nominal by Nominal	Cramer's V	0.368	0
Nominal by Nominal	Cramer's V	0.384	0
Nominal by Nominal	Cramer's V	0.381	0
Nominal by Nominal	Cramer's V	0.365	0
Nominal by Nominal	Cramer's V	0.375	0
Nominal by Nominal	Spearman Correlation	0.3	0.001

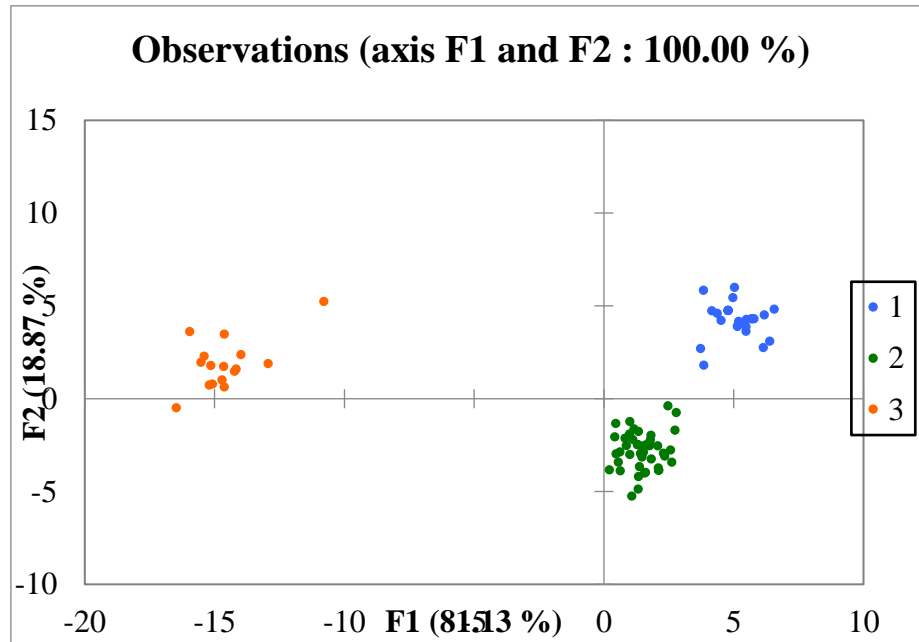


Figure 4. Categorization of Business Groups According to Internet Usage Levels

The utilization of discriminant factorial analysis (DFA) has enabled us to validate the existence of three distinct groups among the surveyed companies identified through hierarchical ascending classification (HAC). These companies have been categorized into three separate classes based on their daily internet usage levels. Discriminant factorial analysis furnishes us with a clear classification of the surveyed companies regarding their daily internet connectivity and its impact on business performance. DFA distinctly segregates companies along the factorial planes F1 and F2, accounting for a total inertia absorption of 100%. Groups 1 and 3 exhibit positive opposition along the ordinate axis, with an inertia of 18.87%, while group 1 demonstrates negative opposition along the coordinate axis, with inertia of 81.13%. The majority of companies are currently in the developmental phase concerning their daily internet usage.

d. The impacts of factors on business performance

The forthcoming figure illustrates the correlation existing between internet usage and business performance.

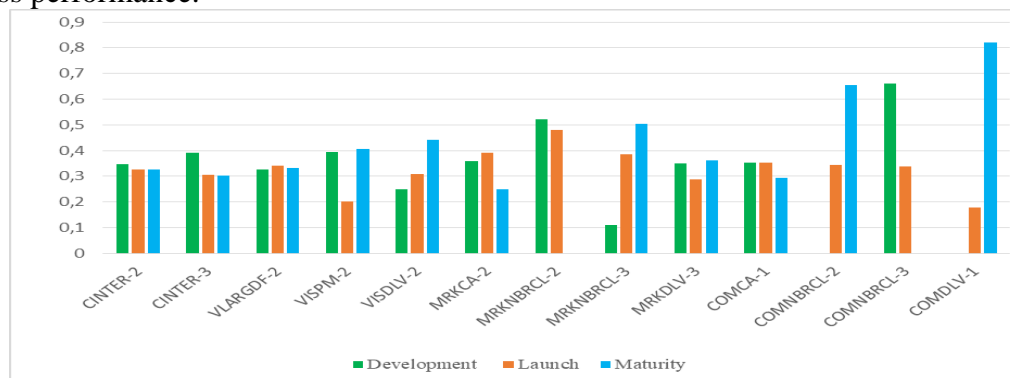


Figure 5. Attributes of Factors influencing Business Performance

The correlation between internet usage and business performance, as revealed by the classification of the explanatory variable, has shed light on the impacts of internet usage on SME performance. Among the surveyed companies, the group in the maturity phase constitutes

14%, distinguished by an uptick in customer numbers in marketing (MRK NBRCL-3) and the presence of effective daily communication channels (COM NBRCL-2) related to product delivery times. The prioritization of determining factors has underscored that the adoption of internet usage aligns with companies' capabilities and environments. The second group comprises 54% of surveyed companies, notable for boosting customer numbers through innovative communication strategies (COM NBRCL) and expanding market share via the adoption of new visibility tools (VIS PM). The third group, representing 32% of surveyed companies, is characterized by the adoption of new marketing channels. The emergence of the internet plays a significant role in enhancing business performance amidst various ongoing innovative factors.

3.3 Motivations and Limitations of Internet Utilization

The initial analysis of the research findings presents a comprehensive overview of the characteristics of the companies within our sample, enhancing our understanding of small and medium-sized manufacturing enterprises utilizing the internet. The surveyed companies are divided into three categories (maturity phase, development phase, and launch phase) based on their frequency of internet usage. More than half (54%) of the surveyed companies fall into the development phase regarding internet utilization in their operations. Conversely, 14% of the surveyed companies are placed in the maturity or moderation phase concerning internet usage. Various factors contribute to these findings at the SME level, including the expenses associated with connectivity and equipment procurement, which pose significant challenges for small and medium-sized enterprises. Over the last two decades, internet usage has become increasingly prevalent; surpassing 75% compared to other information tools. As depicted in our research findings (refer to Figure 1), information retrieval holds substantial importance for companies. The majority of surveyed companies utilizing the internet maintain active websites (87%) and Facebook accounts (92%), which are regularly updated. Managers primarily aim to enhance the visibility of their company's products in the market through this innovative tool. In Madagascar, internet usage among companies is predominantly at a basic level, although some have developed websites serving as gateways for virtual access to company data for customers, suppliers, and various partners. Internet usage and its associated applications encompass social media platforms, presenting significant opportunities for communication and marketing. The internet serves as an innovative tool in the contemporary business landscape, with competitive pressures driving companies to utilize it on a daily basis.

3.4 The Influence of Internet Utilization on Business Performance

Assessing the impact of internet usage and integration on business performance involves evaluating the enhancements across different directions, functions, and areas where these innovative technologies are applied. Particularly, these impacts are most evident in the marketing realm, where they contribute to improving brand image and reputation. Internet usage positively influences marketing efforts, bolstering both brand image and product competitiveness in markets. Within companies, internet usage significantly contributes to enhancing all business processes, even though measuring financial results directly attributed to internet usage can be challenging. The return on investment is often tied to the turnover invested, manifesting in both direct sales volume through internet channels and indirect sales volume facilitated by online presence. In the commercial dimension, internet usage fosters market expansion, enabling companies to tap into new markets. Establishing websites, showcase websites, and Facebook pages offers numerous advantages in the commercial arena. Moreover, internet usage empowers employees, fostering motivation in task completion and enabling remote work across various domains and teams for improved organization.

IV. Conclusion

Business performance and internet usage are tightly intertwined aspects, as evidenced by this research investigating the influence of internet utilization on the performance of manufacturing enterprises. The study underscores the significance of internet usage in commercial performance. Despite being a developing country, internet usage among small and medium-sized enterprises (SMEs) in Madagascar remains relatively low compared to other nations. The surveyed enterprises are segmented into three distinct categories based on their daily internet usage levels: launch phase, development phase, and maturity phase. Several factors motivate companies to incorporate daily internet usage into their operations, including utilizing it as a tool for information search, communication, and marketing. The research highlights how internet usage now plays a pivotal role in determining the performance of user companies.

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