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DIGITAL ADOPTION WITHOUT PRODUCTIVITY GAINS: RE-EXAMINING SME PERFORMANCE IN DEVELOPING ECONOMIES

Ahsan Shahzad Qazi[*1], Ninoshka Samson Tatti[2]

[*1]*National Sales & Marketing Head, National College Business of Business Administration & Economics*
[2]*Admin officer at Happy Home school, Khadim Ali Shah Bukhari Institute of Technology*

[*1]ahsan01986@gmail.com, [2]ninsim2020@gmail.com

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Corresponding Author: *
Ahsan Shahzad Qazi

Abstract

The growing use of digital technologies by SMEs in emerging economies has led to high expectations regarding productivity improvements and increased competitiveness; yet, empirical research shows that these hopes are not necessarily fulfilled, creating an apparent disconnect between technological advancement and actual results. To define this phenomenon, this study posits the concept of the "productivity illusion," whereby the use of advanced technologies does not lead to corresponding improvements in productivity and growth. Using the RBV and Institutional Theory as its theoretical background, this paper claims that mere technology usage is not enough; instead, technology is supposed to be paired with other resources that would complement it, allowing organizations to reap tangible benefits. Based on the review of the latest scientific literature, this paper discusses the mediating role of various factors, including but not limited to human capital, management practices, organizational integration, as well as structural factors such as institutional weakness, financial constraints, and infrastructure problems. The research concludes that the benefits of technology can only be achieved under certain conditions and that the productivity increase is highly conditional and uneven.

1. Introduction

Small and Medium Enterprises (SMEs) have been identified as key catalysts of economic development, job creation, and innovation in many economies around the world, especially in developing nations (World Bank, 2024). SMEs make up a large number of jobs and a significant portion of gross domestic product but are still less productive than big businesses (OECD, 2023).

In recent times, digitization has emerged as a potential remedy for the productivity problem faced by SMEs. Efforts by both governments and international institutions have aimed at encouraging SMEs to invest in technology including cloud services, digital platform technologies, and enterprise software solutions among others to boost productivity (Cirera et al., 2021). However, despite these interventions, the anticipated gains in productivity have not occurred across all SMEs.

Such a difference between the adoption of technology and performance raises an underlying problem. As more and more SMEs are embracing technology, not all companies have been able to leverage the technology adopted to enhance their performance and productivity. Such occurrences highlight the productivity illusion, the belief that the adoption of technology enhances performance and productivity.

The productivity illusion is even more apparent when considering emerging economies, where firms are working under resource-constrained

institutions and have limited organizational capacity. It is assumed that any technology application automatically results in productivity improvements, ignoring the relationship between internal and external factors (Cusolito et al., 2020).

It is intended to assess whether the adoption of technological innovations without additional measures is enough to ensure better performance for SMEs and explain what processes lead to productivity gains. Based on both theoretical and empirical approaches, the paper presented an understanding of productivity illusion.

2. Theoretical Foundations of Technology and SME Productivity

A number of studies have investigated the interconnection between technology adoption and productivity based on various theoretical approaches. Traditional economics believes that any technological development brings improvements in efficiency and productivity gains. However, modern theories deny such determinism and highlight the significance of specific capabilities of organizations and institutional environment for technology productivity.

According to the Resource-Based View (RBV), firm effectiveness relies on the proper use of valuable and rare resources that cannot be easily replicated (Barney, 1991). This means that technology itself is not productive. Instead, its productivity depends on its integration with organizational capability that includes knowledge, skills, management capacity, etc. The firms that have strong absorptive capacity can benefit from the use of technology to achieve better results, while organizations without these skills have little effect (Brynjolfsson et al., 2021).

The Institutional Approach focuses on external factors like institutional, legal, and environmental conditions to explain firm performance (North, 1990). The absence of a sound institutional system in developing economies results in high costs of adoption of technologies in developing countries, where regulatory issues, institutional voids, and infrastructural problems make it challenging for SMEs to benefit from technology adoption.

Moreover, the concept of X-efficiency underscores the existence of inefficiencies within organizations. The theory asserts that organizations do not function at their best capacity owing to low levels of motivation, inadequate managerial skills, and poor organizational discipline (Leibenstein, 1966). In the case of SMEs, such inefficiencies hinder the effective utilization of technology.

Table 1: Theoretical Perspectives and SME Productivity Dynamics

Theory	Core Assumption	Implication for SMEs
RBV	Resources must be effectively utilized	Technology requires capabilities
Institutional Theory	Environment shapes outcomes	Weak systems reduce impact
X-Efficiency	Firms underperform internally	Inefficiency limits gains

3. Technology Adoption and The Productivity Paradox

However, there has been an increased skepticism about this notion due to the presence of the productivity paradox, despite the adoption of technology and its subsequent impact on productivity in the digital era (Brynjolfsson et al., 2021).

The productivity paradox is well illustrated when it comes to the adoption of technology among SMEs in developing economies. Despite their efforts at integrating technology, it does not always result in better efficiency because of its inadequate utilization and integration into the company's business process (Cirera et al., 2021).

Another issue connected to technology adoption is the occurrence of productivity losses in the beginning. In other words, organizations need time to adjust to a new tool, which may decrease productivity initially before resulting in benefits from the use of technology. The concept of the "productivity J-curve" refers to such phenomena and implies delays in achieving the desired results (Brynjolfsson et al., 2021).

Such a situation becomes especially challenging for SMEs in developing economies, where it is more difficult to cope with initial disruptions

because of limited resources and managerial competencies.

Table 2: Technology Adoption Outcomes in SMEs

Stage	Expected Outcome	Observed Reality
Adoption	Efficiency gains	Increased complexity
Transition	Process improvement	Adjustment costs
Maturity	High productivity	Conditional gains

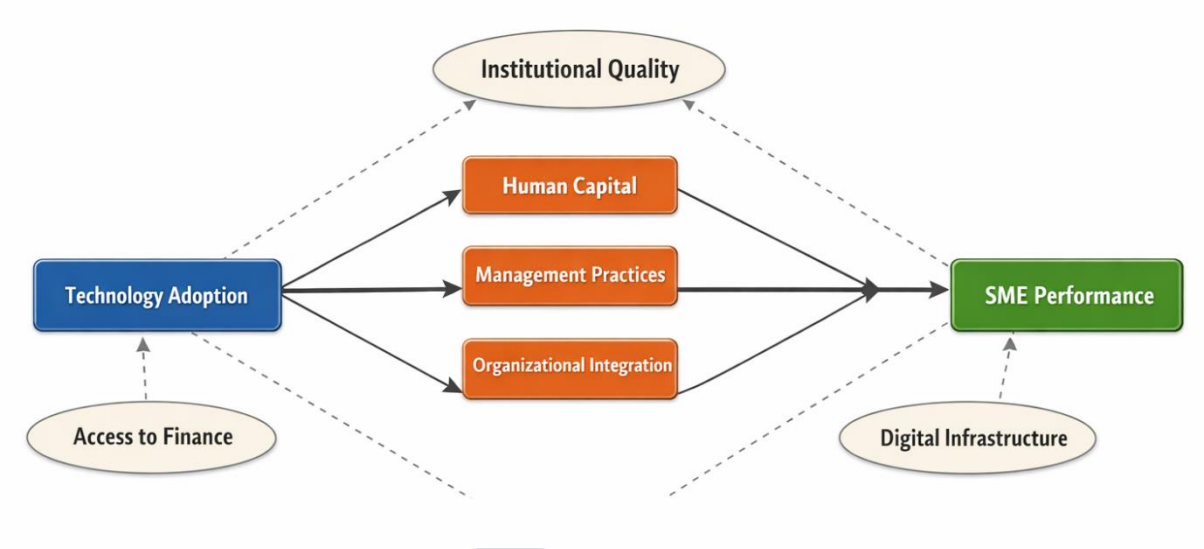

Fig 1: Theoretical Framework

4. Internal Organizational Factors and Productivity Limitations

Organizational factors within the firm also have a crucial part to play when it comes to the adoption of technology translating into increased productivity. Two important organizational factors are human capital and management practices.

The effective use of technology requires human capital. Many emerging economies are characterized by serious deficiencies in their workforce, especially those related to their skills in using digital technologies. Staff members lack training for the effective use of technology because of which there is inefficiency and poor usage of it (OECD, 2023).

Another factor that affects the implementation of technology is that of management practices. As most SMEs adopt informal management practices, this implies low levels of planning, monitoring of performance, and centralization of decisions. All these factors contribute to making the use of technology ineffective (Bloom et al., 2020).

Table 3: Internal Constraints Affecting SME Productivity

Factor	Impact	SME Condition
Skills Gap	Reduces efficiency	High
Weak Management	Limits strategic use	Common
Informal Processes	Reduces optimization	Frequent

5. Structural and Institutional Constraints

The functioning of SMEs in developing countries is constrained by both structural and institutional limitations. Such limitations have considerable impact on the efficiency of technology usage.

Financial barriers limit the capacity of SMEs to make investments in complementary elements like training, infrastructure, and innovation (World Bank, 2024). If those investments are not made, then technology usage will remain incomplete and thus ineffective.

Furthermore, regulatory deficiencies play a role in aggravating the existing problems. Inefficient bureaucracy leads to additional costs and loss of opportunities due to excessive regulation (OECD, 2025).

Limited access to digital infrastructure like reliable internet connection makes the implementation of technologies difficult (Cirera et al., 2021).

Table 4: Structural Barriers and Productivity Outcomes

Barrier	Impact	Outcome
Finance Constraints	Limits investment	Low productivity
Weak Institutions	Increases inefficiency	Reduced performance
Poor Infrastructure	Limits utilization	Operational inefficiency

6. Technology Adoption Vs Digital Transformation

It is crucial to distinguish between technology adoption and digital transformation since while the former concerns itself with the mere acquisition of digital technologies, the latter pertains to the embedding of such technologies within the organization's strategy and processes (Vial, 2019).

Small businesses that rely on adoption alone tend to lack productive success. On the other hand, companies that manage to integrate technology through organizational change are bound to experience performance improvements (Brynjolfsson et al., 2021).

Table 5: Adoption vs Transformation

Dimension	Adoption	Transformation
Scope	Limited	Comprehensive
Impact	Short-term	Long-term
Outcome	Minimal gains	Sustained productivity

7. Extended Analysis of The Productivity Illusion: Micro and Macro Dynamics

It should be noted that the illusion of SMEs' productivity resulting from the introduction of technological innovations is a multilevel problem that operates both on the company-level (micro-level) and systemic levels (macro-level). In particular, the micro-level aspect of this problem is connected with poor integration of digital innovation within firm operations, whereas macro-level problems concern limitations associated with institutional context affecting the effectiveness of digitization (Cirera et al., 2021).

At the micro-level, companies often use technology reactively instead of doing it purposefully. In other words, SMEs start using digital solutions due to competitive pressure, government intervention, or market trends, which means that digital tools are introduced into existing business practices. The absence of business process redesign leads to redundant actions performed by employees and thus affects productivity negatively (Brynjolfsson et al., 2021).

Moreover, most businesses underestimate the complexity associated with the use of technological innovations. Technology adoption requires additional investments connected with employee training, process redesign, and change management in order to increase their productivity. As a result, productivity growth becomes insignificant, which justifies the assertion that technology is a resource that

should be integrated into business processes (Cusolito et al., 2020).

From a macro perspective, institutional contexts are vital in determining the productivity results. In developing countries, poor institutional arrangements lead to ambiguity, increasing transaction costs, thereby discouraging businesses from investing in capabilities development (North, 1990). Moreover, infrastructure challenges limit the usefulness of technology, thereby diminishing its influence on productivity levels.

Table 8: Micro vs Macro Drivers of the Productivity Illusion

Level	Key Drivers	Effect on Productivity
Micro (Firm)	Skills gap, weak management	Inefficient utilization
Micro (Firm)	Lack of process integration	Low returns on technology
Macro (System)	Institutional weakness	High transaction costs
Macro (System)	Infrastructure gaps	Limited digital functionality

8. Complementary Investments and The Role of Absorptive Capacity

The notion of absorptive capacity is a key aspect that can explain why the productivity illusion occurs, as it denotes an organization's ability to absorb, assimilate, and use new knowledge (Cohen & Levinthal, 1990). The absorptive capacity of SMEs positively affects their potential to utilize digital technology and increase productivity.

In turn, complementary investments are crucial for enhancing absorptive capacity. In particular, they involve investments in employees' training, changes in the organizational structure, and innovations. Otherwise, the adoption of technology will not be effective and will yield insignificant results (OECD, 2023).

As noted by Cirera et al. (2021), there is a positive correlation between the simultaneous investment in technology and human capital and productivity growth. In other words, productivity gain depends on synergy between the two factors rather than on their sequential usage.

Table 9: Complementary Investments and Productivity Outcomes

Investment Type	Role	Productivity Impact
Training & Skills	Enhances technology use	High
Process Innovation	Improves efficiency	Moderate–High
Organizational Change	Enables integration	High
Technology Alone	Limited effect	Low

9. Digital Misalignment and Strategic Failure in SMEs

One of the important factors behind the phenomenon of productivity illusion lies in the mismatch between technological advancement and strategy. In fact, many small companies implement information systems without grasping the importance of how technology can bring about value for them.

Such mismatch leads to a fragmented approach whereby various digital tools perform independently from each other. This, in turn, reduces both efficiency and effectiveness in operations (Vial, 2019).

In addition, small businesses usually struggle to plan strategically due to their limited capacity in this regard. Consequently, such organizations may face difficulties while making decisions about investing in technology.

10. The Role of Institutional Quality in Shaping Productivity Outcomes

Technology adoption can be more effective based on institutional quality. In well-developed institutions, firms are able to reap benefits from stable rules and regulations, effective markets, and access to resources that make technology more productive (Rafiei et al., 2023).

In poorly developed institutions, firms have to deal with problems like corruption, instability in regulation, and financial constraints. These factors make operations more costly and less effective in terms of digitalization (Doan et al., 2022).

Table 10: Institutional Quality and SME Performance

Institutional Level	Effect of Technology	SME Outcome
High Quality	Positive	Innovation & growth
Low Quality	Negative	Inefficiency & stagnation

11. Policy Synthesis and Strategic Framework

The analysis suggests that improving SME productivity requires a comprehensive approach that integrates technology adoption with capability development and institutional reform.

Table 11: Integrated Strategy for SME Productivity Enhancement

Strategy	Focus Area	Expected Outcome
Skill Development	Human capital	Higher efficiency
Management Reform	Organizational capability	Better alignment
Infrastructure Investment	Digital systems	Improved utilization
Institutional Strengthening	Governance	Reduced inefficiency

12. Sectoral Variations in Technology Impact on SME Productivity

It is worth noting that the adoption of technology among SMEs has varying effects on productivity in different industries, and the heterogeneity only serves to deepen the notion of productivity illusion. This is because there are differences in technological maturity, capital intensity, and human skill dependency in different sectors, which influences how effectively technology translates into productivity (Goldin et al., 2024).

Technology adoption is most productive for manufacturing SMEs in terms of improving efficiency and output. However, these improvements are limited by the high cost of adopting new technologies, low expertise on technical issues, and inability to maintain the advanced equipment in developing countries. Therefore, the use of technology among manufacturing SMEs is mostly limited to adoption without actual implementation (Cirera et al., 2021).

Service sector SMEs are known to embrace digital technology more rapidly compared to other types of SMEs, especially concerning e-commerce solutions, CRM software, and marketing technology platforms. The adoption of digital technology helps SMEs enhance market reach and customer engagement, but their contributions to productivity are limited in scope (Scuotto et al., 2021).

The issue of agricultural SMEs provides yet another perspective, where the adoption of new technologies depends upon many exogenous factors like climate change, inadequate logistics, and market dynamics. Technological solutions like digital platforms supported by mobile phones and precision farming can help in improving productivity, but limited infrastructure and poor digital awareness hinder this from being accomplished (World Bank, 2024).

It clearly shows that productivity illusion is a relative phenomenon, one that is dependent upon the nature of the sector. It thus follows that the efficiency of technology adoption depends upon the unique characteristics of each sector.

Table 12: Sectoral Differences in Technology Impact

Sector	Type of Technology	Productivity Impact	Key Constraint
Manufacturing	Automation, ERP	High potential	Cost & skills gap
Services	Digital platforms, CRM	Moderate	Strategic capability

Agriculture	Mobile tech, precision tools	Conditional	Infrastructure & literacy

13. The Temporal Dimension of Productivity: Short-Term Disruption Vs Long-Term Gains

Another important aspect of the productivity illusion involves the time horizon in which the effect of technological adoption is felt. It must be noted that the productivity illusion is not immediate and occurs in phases of adoption over time.

The first step in the adoption of technology is characterized by disruption in the organization and its operations. This involves learning new systems and working on new processes and procedures, which come at a cost in terms of adjustments. This means that during the first phase, instead of an increase in productivity, its decline will likely occur, emphasizing the view that technology adoption is ineffective (Brynjolfsson et al., 2021).

Once firms become accustomed to the adoption of technology, increased efficiency becomes possible, but this would not lead to large productivity increases without making other complementary investments.

Finally, in the long run, successful integration of technology results in productivity growth. Productivity growth in the long run is due to efficiency gains and innovations and scaling up. Many SMEs in developing countries do not achieve this because of their limitations.

This temporal view reveals that the illusion of productivity stems from the unrealistic time frame expectations about the advantages of technological innovation. Policy makers and executives anticipate quick gains from their IT investments without considering the necessary adjustment period to achieve success.

Table 13: Temporal Effects of Technology Adoption

Time Horizon	SME Experience	Productivity Outcome
Short-Term	Disruption, learning costs	Decline or stagnation
Medium-Term	Adaptation phase	Gradual improvement
Long-Term	Full integration	Significant gains

Conclusion

This research questions the hypothesis that technology adoption always positively impacts the productivity of SMEs operating in developing countries. It uses the idea of the productivity illusion to show how digital technologies are unable to enhance the performance of firms until appropriate capabilities and contexts enable them to do so.

First of all, internal issues related to human resources, management practices, and organization are essential for deciding whether it is possible to make effective use of available technologies. External aspects like institutional quality, financing, and infrastructure, however, have an impact on the way technology translates into productivity results.

In addition, productivity gains should not be viewed as immediate and universal but as gradual and varied based on the type of industry. If there is no technology integration, however, then the use of technology will add to the complexity of the business operation without providing any improvements to efficiency.

From the viewpoint of policymakers, the findings imply that efforts to encourage technology usage alone will not suffice. Capability-building and capacity-building activities must receive more attention. In the same vein, SME owners and managers should undertake digital transformation as a strategic initiative by aligning their technology investments with organizational capabilities.

To conclude, productivity growth in SMEs does not result from technology use alone but from the existence of organizational capabilities. The challenge of breaking through the illusion of productivity necessitates an effort that integrates the two. Further empirical studies are recommended in order to verify this theory.

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