Unveiling How Dynamic Capabilities Drive Sustainable Performance in SMEs

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Abstract. The Small and Medium Enterprises (SMEs) industry in India is important in economic growth and offers a long-lasting livelihood to a good number of individuals. They are innovators, enhance regional growth, and give impetus to big industries by being suppliers and providers of services. The rise in challenges has exerted pressure on SMEs in India to remain competitive and perform well, since they have made considerable contributions. With the rising environmental and social requirements, businesses are obliged to put primary focus on their sustainable performance to balance the requirements in economic, environmental, and social dimensions. In order to attain this, enterprises should be able to create and utilize a wide range of competencies and resources. Reviews of the past literature show that dynamic capabilities (DCs) are an important component in enhancing sustainable performance. Although sustainability is an area that has been researched on much, similarly the research concerning SMEs is still not as much as that on large enterprises. In bridging this gap, the following study examines how different combinations of DC dimensions affect the sustainability of SME companies. This research examines the data from 240 SMEs using the fuzzy-set qualitative comparative analysis (fsQCA) method.

Keywords: Sustainable performance, Dynamic capabilities (DCs), Small and Medium Enterprises (SMEs).

1 Introduction

Small and Medium Enterprises (SMEs) make a huge impact on India's economic growth and make significant contributions to GDP, employment, exports, and industrial output. Based on the available sources of information, the changes that took place in the mid-1980s signaled the beginning of the end of the war in Afghanistan. As per current statistics, SMEs are contributing about 30 percent to the GDP and about 45 percent of the total exports in India, and provide jobs to about 110 million people. Innovation and competitiveness are also brought about by SMEs by introducing new products and bettering processes, which makes markets more dynamic. Additionally, they benefit the regions and rural areas through setting up businesses in areas that are underdeveloped and less economically developed.

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Most SMEs cannot afford to expand their business to a point where big corporations can, either because of a lack of resources in a competitive and ever-changing business environment [1]. These weaknesses comprise investment capital, labor, and implementation of modern technologies as well as sustainable business strategies [2], which keep them behind. Nevertheless, SMEs are characterized as suitable and effective in adapting to the market changes [3]. As a result, they are commonly known as one of the first innovators in the industry, irrespective of their working constraints [4].

Though the Indian SMEs have helped in the gross output in a magnificent manner, there has been pressure to ensure they remain competitive and at the same time perform well. The environment and the social requirements are increasing; therefore, the companies must take into consideration their sustainable performance by finding a balance between the economic, environmental, and social components to properly perform. To achieve this, it is important that the enterprises develop and make use of different capabilities and resources. Here, dynamic capabilities are critical in enhancing the sceptic performance of businesses. Though many papers have been conducted on sustainability, very few studies have been done on SMEs, especially when they are compared to studies that feature the large-scale businesses. This study examines the relevance of the dimensions of dynamic capabilities on the sustainable performance of SMEs.

2 Theoretical Background

2.1 Dynamic Capability View

The RBV (resource-based view) asserts that enterprises should possess uniquely diverse, company-specific resources that are valuable, scarce, difficult to replicate, and irreplaceable [5]. Firm RBV proficiently describes how firms gain a competitive advantage and how they can sustain it. However, with the growing volatility of the environment, RBV is seen as unchanging and ignores the effect of market fluctuations [6]. In accordance with practical demand, Teece et al. [7] broadened RBV to the scenario of the evolving landscape and suggested that businesses must continuously adjust, restructure, and revitalize their resources and competencies to keep up with shifting market conditions. Currently, this approach is a universally recognized theory of DCs.

DCs are a firm's capability to merge, develop, and adjust internal and external competencies to cope with rapidly evolving business landscapes [7]. Researchers have differing opinions about DCs due to variations in the underlying assumptions of the DC framework. To prevent the repetition of describing capability with ability, Eisenhardt and Martin [6] propose a comprehensive explanation from the procedural perspective; DCs are specific organizational processes or routines, such as innovation and design, strategic planning, and forming collaborations. DCs are the process of integrating,

changing, modifying, and renewing the firm's resource base [8]. Zollo and Winter [9] assert that firms build DCs to enhance the performance of their resources. They attain this through their systematic routines and collective activities. Others define DCs as a firm's capability to consistently and repeatedly create and restructure its resource base ([10] Barreto [11] has conceptualized DCs as an organization's ability to address difficulties systematically, that is, its skill in recognizing advantageous situations and risks, making prompt and market-driven decisions, and modifying its resource portfolio.

A firm possesses a set of capabilities that can be differentiated as ordinary capabilities and DCs [12] Ordinary capabilities help a firm to carry out its routines. DCs lie on the higher level of the hierarchy, which acts on ordinary capabilities and resources and modifies them. The relevance of specific DCs may vary depending on the context, with some proving more critical than others [8]. Based on prior studies, different perspectives of DCs lead to various complications and periphrastic challenges. The key difference among researchers is the conceptualization of DCs, whether they operate at a single level or whether there is a hierarchy of capabilities in existence in an organization.

2.2 Dynamic Capabilities and Sustainable Performance

Prior research has established a direct link between DCs and firm performance [7]. Similarly, Pezeshkan et al. [13] found a significant positive relationship between DCs and firm performance. Jamali [14] defined sustainable performance as an organization's capacity to retain consistent and long-term success while balancing the ecological, social, and financial objectives of a firm. The nature of sustainability is fast evolving and uncertain [15]; researchers stated that continuous modifications are required for the successful attainment of sustainability, and it can be made possible through DCs [16]. According to Mousavi et al. [17], there is a favorable correlation between DCs and innovation sustainability. Wu et al. [18] adapted the notion of DCs to a sustainability framework, describing it as an organization's capacity to meet the swiftly changing sustainability demands of stakeholders by intentionally adjusting operational capabilities to achieve ecological, social, and financial objectives simultaneously. Researchers have explored various sustainability concepts, such as eco-design, green innovation [19], and green entrepreneurial orientation [20].

Previous studies reveal inconsistent evidence on how DCs influence sustainable performance. While some research has identified a positive connection [21], others have found a negative one [22]. There are multiple reasons for this; researchers have conceptualized DCs in various ways, for example, generic DCs [23] and sustainability-oriented DCs [19]. Another reason for the ambiguity in the existing literature is that empirical studies are not enough to assess the effect of DCs on the three pillars of sustainable performance, i.e., ecological, social, and financial performance. Scholars largely emphasized the sustainability of major enterprises. The capabilities and

resources of large organizations are different from those of small and medium enterprises [24]. DCs are not static; they evolve gradually and are influenced by both internal and external elements. Developing DCs in small and medium enterprises may take years [25]. Despite the difficulties, studies show that SMEs depict various DCs [26].

When the Firms build robust dynamic capabilities, then they are in a vantage position to realize high sustainability performance at the environmental, social, and economic levels, even though the resources are low [27]. Companies that have high dynamic capabilities, such as adapting, innovating, and recombining resources, can improve sustainability performances (in economic, social, and environmental levels) in great ways. The effect is even stronger, particularly when the business environment is highly volatile or fast-changing, on economic and environmental results [28]. The dynamic capabilities are very useful to organizations that seek to develop in a sustainable manner. By merging environmental sustainability, economic sustainability, and corporate social responsibility within its strategic planning, corporations can play an essential role in the Sustainable Development Goals [29].

DCs are multidimensional [11], comprising various interrelated components that collectively enhance firm performance. Tseng and Lee [30] state that not all aspects of DCs equally lead to firm performance. This study adopts the DCs framework proposed by Pavlou and El Sawy [31], emphasizing the dimensions of sensing, learning, integrating, and coordinating. Sensing means an organization's capability to recognize, understand, and seize opportunities in the vicinity [31]. This capability involves investigating and analyzing markets and technologies within and beyond the organization's immediate environment [32]. Tseng and Lee [30] found that sensing is favorably associated with its performance, particularly when knowledge management is effectively implemented. Learning capability is essential for obtaining and integrating knowledge and effectively utilizing it to support developing and adjusting an enterprise's competence and asset base [33]. Integrating capability refers to the capacity to integrate new insights into business operations by promoting mutual comprehension and collective interpretation [31]. The coordinating capability organizes and assigns responsibilities, distributes resources, and coordinates activities to facilitate the development of new operational competencies [31].

Thus, we propose the following;

P1: Sensing capability has a considerable effect on SME's sustainable performance.

P2: Learning capability has a considerable effect on SME's sustainable performance.

P3: Integrating capability has a considerable effect on SME's sustainable performance.

P4: Coordinating capability has a considerable effect on SME's sustainable performance.

3 Methodology

3.1 Sample and Data Collection

Data from the Industries Department, Government of Kerala, was used as a reference to identify and select the survey samples. The sample selection criteria include being a registered small or medium manufacturing enterprise under the MSMED Act, 2006, and having an operational history of more than five years. The list was then used to select at random 1,500 SMEs to whom the questionnaire was emailed, and it was anticipated that the responses would exceed 250. All in all, there were a total of 280 firms responding to the survey, which gave an 18% response. The total number of duly filled responses received came to 240, an end result of a 16% response rate out of the total number of responses received. The response obtained was 174 small-sized and 66 medium-sized enterprises, depending on the categories of the MSMED Act, 2006. Demographics of manufacturing SMEs are given in Table 1.

3.2 Measures

The independent variables-sensing, learning, integrating, and coordinating capabilities were rated depending on a 19-item scale of Pavlou and El Sawy [34]. Sustainable performance was defined as the dependent variable based on 15 items in the research carried out by Guo et al. [35], Kumar et al. [36], Shang et al. [37], and Martinez-Conesa et al. [38].

3.3 fsQCA

We employed the fuzzy Set Qualitative Comparative Analysis (fsQCA), which is based on set theory and configurational logic [39]. FsQCA is a qualitative comparative analysis method that allows researchers to discover the conditions leading to a particular result [40]. Conventional statistical analyses find it hard to incorporate interaction effects of three or more antecedent conditions on a specific outcome [39]. The former ones (SEM or PLS-SEM) calculate only the linear and net impact of single variables, as opposed to the latter (fsQCA), which allows studying the causal complexity by determining the cluster of conditions sufficient or necessary to achieve an outcome. Dynamic capabilities are complementary and, as such, fsQCA is methodologically in line with the configurational logic of the dynamic capabilities approach. It also eliminates equifinality and asymmetry, and thus, one can learn more subtle lessons on how the different bundles of capabilities affect the sustainability outcomes in different SME settings. As seen through a technical lens, vis-à-vis the technical perspective, fsQCA consists of three key phases, including calibration (transformation of data), truth table construction, and logical minimization.

Table 1. Demographics of SME's

Element	Frequency	Percentage
Respondent function		
Managing director/ CEO	134	56
General manager	92	38
Others	14	6
Industry		
Rubber	26	11
Plastic	31	13
Coir	7	3
Electrical & electronics	18	8
Agri-based products	61	25
Iron, steel & other metals	24	10
Others	73	30
Number of employees		
<10	51	21
10-19	84	35
20-29	49	20
30-40	35	15
>40	21	9
Nature of registration		
Private limited	23	10
Public limited	14	6
Partnership	114	47
Sole proprietor	89	37
No. of years of operations		
5-10	48	20
11-15	86	36
16-20	69	29
>20	37	15

Source: Survey

4 Results and Discussion

Table 2 highlights the descriptive statistics, intercorrelations, and reliability coefficients (Cronbach's alpha) for each construct. The Cronbach's alpha values, indicated along the diagonal, range from .80 to .92, demonstrating strong internal consistency.

In fsQCA, variables are transformed into scores ranging from 0 to 1 through a process called data calibration, allowing for a more nuanced and accurate representation of the data. Scores near 0 signify "low" levels of the construct, while those near 1 indicate "high" levels. Calibration thresholds for full membership, the crossover point, and full non-membership are assigned fuzzy values of 0.95, 0.50, and 0.05, respectively [41]. Once variables are calibrated into fuzzy-set membership scores, the causal conditions contributing to sustainable performance are organized into multiple

configurations. Table 3 presents the analysis results derived from the fsQCA method. In alignment with prior studies, consistency scores above 0.8 [42], along with raw and unique coverage values exceeding zero [43] and solution consistency values above 0.74 [44], are considered indicative of necessary conditions. The current analysis identified three causal configurations (see Table 3) that lead to the outcome, with an overall solution coverage of 0.8576 and a solution consistency of 0.80775. These findings suggest that the identified pathways account for 85.7% of the cases and demonstrate a high degree of reliability in producing the outcome. The raw coverage values range from 0.34 to 0.80, and the unique coverage spans from 0.009 to 0.373, confirming that all values exceeding zero imply that the fuzzy sets produced through fsQCA are dependable. The consistency scores, ranging from 0.84 to 0.93, further support that these configurations are sufficient in explaining the observed outcome.

Table 2. Descriptive measures

Variables	Mean	SD	1	2	3	4	5
1. Sensing	25.68	4.170	.837				
2. Learning	24.46	5.514	.891**	.929			
3. Integrating	21.83	4.094	.974**	.946**	.867		
4. Coordinating	26.24	2.759	-.156*	-.127*	-.107	.806	
5. Sustainable performance	45.66	5.998	.581**	.499**	.562**	-.098	.808

Note(s): *p <.05 and **p <.01

Table 3. fsQCA analysis

Set of causal conditions							
No.	**Sensing**	**Learning**	**Integrating**	**Coordinating**	**Raw coverage**	**Unique coverage**	**Consistency**
1	~	*			0.438361	0.009548	0.952074
2		*	*		0.800127	0.373012	0.830434
3	~		~	~	0.345003	0.046255	0.897846
solution coverage: 0.857628							
solution consistency: 0.807754							

Note(s): * denotes to reinforce and ~denotes to weaken or reduce

Set 1: ~sensing capability, *learning capability; the consistency of solutions is 0.952074. It can be observed in this structure that to increase the sustainable performance, sensing capability and learning capability should exist at the same time, learning capability should be reinforced, and sensing capability needs to be weakened or modulated. This can be useful in other situations, and thus, the overemphasis on market scanning might not be useful in promoting sustainable results at all times. The

strategic implication of this is on resource allocation in that even the SMEs with very few resources can ensure that they reinforce their learning capabilities, which are more influential when it comes to sustainability.

Set 2: *learning capability and *integrating capability; the consistency of the solutions is 0.830434. According to this model, the two capabilities should be there, and then they should be built up to improve sustainable performance in effective ways. This means that knowledge acquisition, continuous improvement, and resource integration should be the main priorities of SMEs with the purpose of establishing them as competitive agents.

Set 3: ~sensing, ~integrating, ~coordinating; the consistency of solutions=0.897846. According to this model, these capabilities should be undermined or curbed in order to facilitate sustainable performance. It implies that operations can be simplified or the aspect of complexity can be minimized, which, under certain circumstances, can make the businesses more efficient and sustainable, especially resource-strained SMEs.

The fsQCA output indicates that sustainable performance in SMEs can arise from unique combinations of dynamic capabilities, both the presence and absence of which. Interestingly, set 1 show that while there is a need for learning capability, its moderated or diminished focus on sensing capability would improve sustainable performance. This challenges the traditional perceptions but is consistent with capability overextension theory—excessive environmental scanning, particularly within resource-scarce SMEs, can cause information overload, strategic diffusion, and misalignment with internal execution capacity [7]. Within such environments, companies can be helped by concentrating on internal adaptation and learning, instead of continuously investing in market sensing activities. Likewise, set 3 proposes that de-emphasizing sensing, integrating, and coordinating capabilities—long considered a good thing—can enhance performance. This can be understood in terms of strategic simplicity and organizational agility, in which over-coordination or integration adds bureaucratic drag and latency, especially detrimental to SMEs that require quick responsiveness [9]. These SMEs can flourish by having leaner arrangements, decentralizing decision-making, and minimizing unnecessary formalization. Set 2 is in favor of more conventional expectations, where building both learning and integrating abilities enhances sustainability performances, highlighting knowledge acquisition and recombination of resources as critical. Combined, these results express the doctrine of equifinality in dynamic capabilities theory that no one trajectory can ensure sustainable performance. Rather, SMEs can follow multiple credible configurations, some focusing on building capabilities, others on simplification, based on strategic goals, circumstances, and operational sophistication.

Whereas the research finds that there are a number of different configurations of dynamic capabilities and sustainable performance, one of the issues of interest here is the fact that dynamic capabilities are interdependent. DCs do not take place in isolation, and therefore appear in combinations, supporting one another, or even substituting for each other, depending on the strategy of the company. As an illustration, it is possible that a lesser emphasis on sensing can be substituted with learning as the firms can

develop inner processes to reshape according to existing knowledge, as opposed to continuous observation outwardly. In the same way, the lack of formal machinery in integrating and coordinating is exercised when it is weak (in Set 3), agility becomes possible, reduces the burden of procedures, and makes it feasible to respond to unclear environments in a brief period. Such findings confirm the notion of functional equivalence and strategic trade-offs in which businesses counterbalance capacity investments depending on the requirements of operation as well as resource constraints. So as to demystify these relationships, a conceptual model is presented in the form of a Venn diagram (Figure 1), representing an arrangement in which the presence or the absence of certain capabilities contributes to sustainable performance in differentiating, albeit theoretically well-organized, configurations, is offered.

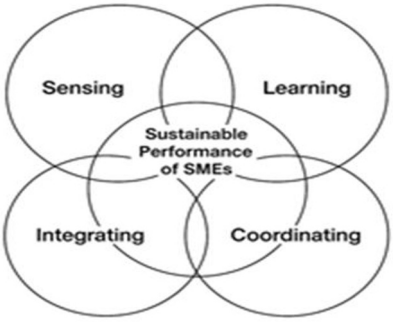

Figure 1 - Venn diagram depicting the key theoretical constructs for the configurational analyses.

5 Conclusion

This study explores how various combinations of DC dimensions influence sustainable performance. It concentrates on small and medium-sized manufacturing enterprises (SMEs), which represent a substantial segment of India's industrial landscape. The findings are derived from a sample of 240 SMEs based in Kerala. The findings from the fsQCA analysis provide valuable insights and practical guidance for SMEs aiming to enhance their sustainable performance. Much of the existing literature has employed traditional methods, such as multiple regression analysis and structural equation modeling, to examine the effect of DCs on firm performance. Notably, the findings indicate that not all dimensions highlighted in prior research are crucial for improving sustainable performance. They have different roles based on other factors that have accompanied them. It should be noted in particular that the integration of one capability with others (e.g., learning and integrating) can effectively make up for the loss of another capability (e.g., sensing). Through this insight, we expand our understanding of the connection between DCs and sustainable performance.The study offers useful information to entrepreneurs on how to improve their sustainable performance in their

SMEs. These findings indicate that sustainable performance can be driven by different combinations of DCs and therefore not all capabilities have to be developed by an entrepreneur at the same time. They can rather have a plan of concentrating on a certain set of capabilities, depending on the capabilities of the firm and the limitations available. An example here is that learning capabilities may be redoubled and integrated as a possible way of enhancing performance despite the limited ability to sense. On the other hand, there are certain instances where the performance can be improved by cutting down or simplifying some of the capabilities (e.g., combining and coordinating), thus enabling entrepreneurs to focus on efficiency and flexibility.

This study has some limitations. This was a cross-sectional study where data were collected at once. Consequently, it is limited in nature since it is not possible to draw any absolute causality between variables [45]. In order to increase the depth of knowledge on the long-term impacts of DCs on sustainable performance, a longitudinal research design should be used in the future.

Additionally, the geographical scope of the study is confined to the manufacturing SMEs in Kerala, and this could interfere with the generalizability of the study results. Such regional aspects like policy environment, market structure, and cultural context may shape the manner of functioning of dynamic capabilities. In the future, they could be compared between regions to replicate the configurational patterns identified in SMEs.

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