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# Assessing the Impact of Customer Pressure, Technology Adoption, Market Volatility, Government Support, and Resource Availability on Small Entrepreneurs' Performance Post COVID-19 Pandemic: A Structural Equation Modeling Approach Using Smart PLS 4.0



**Abstract:** - The impact of the COVID-19 pandemic on the resilience of small and medium-sized enterprises (SMEs) needs to be better understood. This study aims to provide insights into the factors influencing entrepreneurial resilience, particularly in the context of the new norm, focusing on psychological resilience, government support, and market volatility in Central India. It highlights the importance of considering the broader regulatory environment, government policies, social factors, and stakeholder relationships in influencing firm performance. We used a quantitative method for collecting data from 389 small business entrepreneurs in Central India using an offline questionnaire. The literature review emphasizes the complex nature of this relationship, highlighting the positive and negative influences of government actions on firms' performance. The study provides insights into factors influencing firm performance, particularly post-COVID-19, offering practical implications for firms seeking to understand customer relationships and their influence on overall performance. It emphasizes holistically considering innovation, productivity, and customer satisfaction for improved performance and the importance for CEOs and managers to efficiently utilize financial resources to leverage new opportunities and improve overall firm performance. The data analysis was validated using Smart PLS 4.0, and the study model's validity and reliability were assessed. A unique data collection of 389 small business owners in Madhya Pradesh was utilized to test the model and findings. In addition to adding to the corpus of knowledge, this research can help policymakers develop pertinent plans to motivate SMEs that have been most negatively impacted by the COVID-19 pandemic to operate sustainably. There have been several further conclusions made regarding financial institutions and business owners.

**Keywords:** Customer Pressure, Technology Adoption, Market Volatility, Government Support, and Resource Availability, Firm Performance, Small Entrepreneurs, Structural Equation Modeling, Smart PLS 4.0

## Introduction

The stubbornness of small businessmen in Central India post COVID-19 pandemic a murky and muddled phenomenon that includes intellectual, communal, and ecological aspects. Understanding the intertwining of aspects like governmental backing, technology, market fickleness, and customer pressure am imperative in building efficient strategies to enhance the pigheadedness of tiny businessmen in the area. Research exhibit that the endurance and superlative supervision of everyday issues and hurdles faced by small businessmen can heavily bank on stubbornness. What is more, the scrutiny of how tiny retail businessmen rally their competencies in front of adverse occasions be bounded in literature, and the stubbornness notion has been infrequently employed or researched in the retail sector. Furthermore, the part of governmental support in ameliorating the stubbornness of small-scale food businessmen in the new criterion has been scrutinized, bringing to light the potential collision of external support mechanisms on entrepreneurial stubbornness. Furthermore, the impact of change management and training effectiveness on entrepreneur resilience in dealing with the consequences of different business challenges, particularly in small and medium-sized enterprises affected by COVID-19, has been a subject of interest, shedding light on potential strategies to enhance entrepreneurial resilience. Additionally, the significance of psychological characteristics, particularly entrepreneurial resilience, among small entrepreneurs during adverse

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times has been underscored, emphasizing the importance of developing such traits to navigate crises effectively. Moreover, the role of entrepreneurial mindfulness in facilitating organizational resilience, especially in small firms, has been explored, emphasizing the significance of psychological factors in navigating challenges such as the COVID-19 pandemic.

In the context of the COVID-19 pandemic, many studies have explored the impact of lockdown on entrepreneurs, however, existing literature lacks insights into the struggles made by women borrowers turned entrepreneurs during this crisis (Mustafa et al., 2021). Entrepreneurial resilience is one of the most important skills needed by entrepreneurs in dealing with difficult situations that occur in their environment (Pratama & Mardawan, 2022). Moreover, the impact of government support policies and processes on women entrepreneurs' satisfaction, along with personal factors such as individual capacity, family life, social network, and business environment, has been investigated, shedding light on the multifaceted nature of support for entrepreneurs (Lee et al., 2011).

The COVID-19 pandemic has been identify as stress that have entrepreneurs, highlight the need to understands the specific challenges and pressure face by small entrepreneur during this crises (Bäckman et al., 2021). Economic pressures, uncertainty, operation-related pressures, and social pressure have been identified as the main sources of pressure for small and micro-enterprise, highlighting the needs to address these challenges to enhance resilience (Li et al., 2022). The literatures also emphasizes the importance of government supported initiatives in fostering the growth of female businesses, particularly in reason where support institutions may face challenges in raising awareness about their existence (Phillips et al., 2014). Additionally, the roles of personal networks and resource restriction in the development of social enterprises has been explored, highlighting the potentials for leveraging available resources and interpersonal relation to realize entrepreneurial potentials (Liu et al., 2020). Furthermore, the importance of personal initiatives and persistence in obtaining higher available resources have been underscored, particularly for small firms in resources-constrained environments (Jacob et al., 2019). The influence of the COVID-19 pandemic on entrepreneur anxieties has been studied, emphasizing the roles of threats perception and performance pressure in shaping entrepreneurial experiences during the crises (Xu & Jia, 2022). The COVID-19 pandemic has exerted a significance effects on small and medium-scaled entrepreneurs in the informal sectors, highlighting the vulnerability of these businesses to external risks and disruptions (Ozoh et al., 2022). Moreover, the literatures have explored the influences of creativities and resource availabilities in the intelligent career frameworks, emphasizing the needs for environmental supported factors beyond the personalities of youth entrepreneurs, particularly in the context of industrial revolutions 4.0 (Salisu et al., 2021). The roles of Buddhist values for entrepreneurs on small businesses scale in entrepreneurial enforcements during the COVID-19 pandemic has been studied, shading light on the potential influences of religious values on entrepreneurial practices during crises (Mahadewi et al., 2022). Futhor, the adaptation levels of small enterprises to the COVID-19 pandemic has been examine, highlighting the significance impact on turnovers and customer relationships (Gunawan, 2022). The study of natural disasters and women entrepreneur during the COVID-19 pandemic has emphasized the nonlinear impacts of complex events on small and medium-sized enterprises, underscoring the needs to address systemic risks and interdependent impacts (Asrofi, 2023). In conclusion, the literatures provides valuable insights into the various factors that influences entrepreneurial resilience, particularly in the context of the COVID-19 pandemic. By considerations the multifaceted natures of challenges face by small entrepreneur, it is possible to developments comprehensive strategies to enhance their resilience and support their sustainable growth in Central India.

## **Background**

To capture the sentiment of small entrepreneurs surviving in Central India after the COVID-19 pandemic period several factors may be worth looking into to determine their level of resilience. Fortitude, self and sense of coherence help in finding out financial deligencia and health of micro and small entrepreneurship as we find in the earlier studies (Ravikumar et al., 2022). Furthermore, the psychosocial capital and business resilience of the entrepreneurs are important for business continuity during COVID-19 and other harsh trends (Amaral & Rocha, 2022). Moreover, the analysis of resilience as an issue that may contribute to the field of entrepreneurship, especially concerning MSBs and how they adapt to pandemic disruptions, is of great importance (Santos & Mueller, 2022). In the context of India, the idea of entrepreneurship has been promoted at the governmental level through launching of policies and development programs in view of boosting small businesses particularly women entrepreneurs with the believe of fostering the economy (Agarwal & Lenka, 2018). However, lesser research effort

has been made for identifying the success factors in micro-entrepreneurs in rural area of India and one of the important factor highlighted was to eliminate the formalities to borrow finance (Thyagarajan et al., 2021). Similarly in another study analyzing women entrepreneurship in India, the author calls for unity both from the society and governmental bodies to address challenges and foster entrepreneurship (Tripathi & Singh, 2018). Bearing this economic contextualization in mind, it is essential to conduct an evaluation regarding the effects of the market fluctuation on the SMBs in India. There is literature which has reviewed effects of market risk on small-cap businesses on sector-wise basis and raised concern to manage and insulate those risks of market risk which can create values in small-cap firms (Khanra & Dhir, 2017). Similarly, it is important to understand combined movement of liquidity and volatility between small- and large-cap indices in India to provide a rather comprehensive insight into the impact of volatility to small business (Kulshrestha & Bhaduri, 2019). Thus, the research question related to Central Indian small entrepreneurs' coping strategy and their susceptibility to the COVID-19 pandemic addresses the following factors: Psychological resilience, government support in the hours of crisis, and the effect of volatility in the market. It is essential to know these factors in order to address means as to how the resilient or rather the small enterprisers can be supported in handling possible difficulties.

### **Literature review**

This research studies the effects of COVID-19 pandemic on SMEs in Central India and establishes that SMEs in global sectors have been affected massively. These business have been significantly affected by this crisis and identifying the drivers of entrepreneurial resilience during this time is vital for those businesses to thrive in today's climate. Some prior research has looked at various facets of SMEs' pandemic resilience and identified specific factors that firm and stakeholder psychology, governmental aid, and available market indicators impact the performance of (Zutshi et al. , 2021; Matikonis & Graham, 2023; Liu et al. , 2022). These researches argue for understanding the internal circumstances including innovation, productivity, and customer satisfaction, as well as external aspects encompassing the government policies, social factors, and relations with stakeholders that may influence the SME resilience (Branicki et al. , 2017; Lopez, 2024; Purnomo et al. , 2021). The research about SMEs' survival after COVID-19 crisis also reveals some ambivalent role of government actions reporting both positive and negative effects on firms (Matikonis & Graham, 2023). As it can be seen from the case of various SMEs, many employees have faced negative impacts due to the pandemic; however, some sectors and companies have continued to experience or improve the employment rate because of dynamic capabilities and the efficient utilization of government support measures as recommended by Matikonis and Graham (2023). Furthermore, another study by also emphasise on service innovation as a key approach that may help SMEs to build up their resilience, as well as sustain themselves during the prevalence of the pandemic (Lopez, 2024). It is imperative for Central India, where SME constitutes a significant proportion of the business formation, to know how such enterprises can protect itself against COVID-19. Some guidance on improving SMEs' preparedness for the crisis can be gained from analysing the performance of these companies in the context of the pandemic by using the study by Zutshi et al. (2021). In relation to the aforementioned challenges, and outlining areas where SMEs can try creative solutions in future, this research adds to the knowledge of the best direction for businesses in Central India to adapt and progress through the post-pandemic environments. To ensure the study model is valid and reliable to use, the researcher subjected the study model to validation by using Smart PLS 4. As per the given condition to set it to 0 and with the hypothesis test from 389 small business owners in Madhya Pradesh, the fundamental groundwork for the research' conclusion is figured out and presented well (Zutshi et al., 2021). In the following surveys, theoretical and empirical analysis using structural equation modeling have been found to reveal a complex relationship between factors that have an impact on the resilience of SMEs, providing managerial and operational implications for CEOs and managers of firms to improve their performance after the COVID-19 pandemic (Branicki et al., 2017; Zutshi et al., 2021; Matikonis & Graham, 2023). Therefore, the analysis of the literature on SME resilience during the COVID-19 pandemic indicates that the self-employment ecosystem is complex and has several different faces. Analysing the examples of psychological resilience, governmental support, market fluctuations, and clients' relations, the companies' adaptive capability should be increased to exist and develop within the modern conditions. These research findings provide imperative wisdom for SMEs in Central India as well as other regions of the world with suggestions that propose the SMEs should focus more on innovation, productivity, and efficiency of resource usage as a way of responding to future shocks such as a pandemic and hence how they can continue to survive from one pandemic to another.

### Customer Pressure and Firm Performance

An imperative fact in business competition is that customer pressure is imperative and has an indirect impact on the performance of a firm in various aspects. Research has also revealed that customer pressure influences increased adoption of environmental strategies like environmental strategy and management, energy management and specifically environmental planning and export intensity (Adah et al., 2021). Further, customer pressure has been observed to have a positive influence toward green innovation performance; nevertheless, the impact is enhanced by environmental regulation ((Yu et al., 2022). In addition, the results of this study reveal that customer concentration is significant and has a positive influence on firm performance since firms with higher customer concentration tested in this study have higher market value ((Lestari, 2021). Taken together, these studies underscore the significance of the pressure that firms receive from their customers to deliver sustainable improvements in the firm's operational performance, environmental sustainability, and organisational innovation, and in building superior market value. Furthermore, it was similarly self-evident and argued that customer base concentration does affect firm performance as postulated by (Patatoukas, 2011). The findings of the research find that customers' base concentration will be associated with increased sales, better operational cost control, and optimum resource utilization. This corroborates our contention that customer pressure can go far in influencing firm performance. However, in contrast, Kim and Henderson (2015) focus on the level of dependency in triadic Supply Chain Relationships and its financial cost across the Supply Chain and explores the overall effect of both a Suppliers and Customers deep and complex relationships on the Focal Firm's financial position. This reference is useful in directing attention to the forces arising from customers and potential impacts on firm performance in the setting of supply chain relationships.

**H1** - There is a positive and significant relationship between customer pressure and the firm performance post COVID-19.

### Technology Adoption and Firm Performance

Technological sophistication is a key driver of firm success. Based on prior studies, it is evident that adopting advanced digital technologies (ADT) which encompasses technologies from stage 4 and above offer varying benefits in a firm (Oh & Kim, 2022). Oh & Kim (2022) explain that when organizations implement more than one ADT their performance is higher compared to the firms implementing only one of those technologies. The external and internal variables driving the adoption and utilization of technology include technology competence, firm size, technological resources and the pressure from competitors (Zhu & Kraemer, 2005). However, absorptive capacity, which concerns the act of acquiring knowledge for the purpose of improving the performance of the firm, depends on triggers relating to investments aiming at the development of other capabilities (Zahra & George, 2002). According to the evaluation of the previous literature, the Technology-Organization-Environment (TOE) framework specifies the decision factors in the adoption analysis of firms which comprises of relative advantage, technological readiness, top management support, firm size, and government policies or regulations (Pérez-Morón, 2021). Other drivers of performance also include strategic flexibility, knowledge management, firm governance, and IT implementation (Parameswar et al., 2021). There are external factors that can shift the incentives that firms have to invest in new technologies from the aggregate demand or any experimentation of the existing environment (Alfaro-Serrano et al., 2021). Technological opportunism, market orientation and e-business adoption may in a manner work synergistically to impact on the firm performance thereby supporting the tenet of complementary firm-specific advantages (Voola et al., 2012). Also, the incorporation of new technologies such as, CRM and e-business can also improve operational sustainability and sustainable operation and growth in firms (Oh & Shim, 2020; Chatterjee et al., 2021). In adopting smart technologies in the agri-food industry, the following challenges are some of the issues facing firms; Organizational factors that need to be addressed for the successful implementation of smart technologies (Annosi et al., 2020). As highlighted in section 3, several factors such as absorptive capacity, technology adoption practices, sustainability, export orientation, and firm size affect the level of innovation, thus financial performance (Dogru & Peyrefitte, 2022). Still, research has been done on the aspects that determine sustainable process technology in an effort to understand the sales firms' actions in implementing sustainable technologies (Fu et al., 2018). All in all, this paper's literature review of technology adoption and firm performance shows that this relationship is not always linear and straightforward but moderated by factors such as IT competency, absorptive capacity, market orientation, and strategic flexibility in order to gain positive or

negative effects. Understand these dynamics is significant to policy development and to those firms that would wish to embrace technology adoption as the key driver of sustainable growth and competitive advantage.

**H2** - There is a positive and significant relationship between technology adoption and the firm performance post COVID-19.

### **Market Volatility and Firm Performance**

Economic risk represents one of the most influential challenges that may affect a firm, especially the firm owned by Central Indian entrepreneurs due to market instability. Since the Indian venture funding system remains underdeveloped, Indian people rely on various funding including the central Government of India financing schemes as well as International resources such as the World Bank Group's Info (Zhang et al., 2021). Prior research has established that there is some relationship between the corporate social responsibility performance and the historical market volatility (Basdekidou, 2017; Basdekidou & Styliadou, 2017). Also, it is necessary to take into account the challenges that entrepreneurs in India have to overcome, for instance, highly uncertain work environments (Maiti, 2012), gender discrimination against women in particular (Kumar & Das, 2019), and restricted access to conventional financing (Zhang et al., 2021). Previous studies also state that low stock market volatility has a positive effect on a firm's operation since this will help to get better capital access (Saleem et al., 2019). On the other hand, as found by many researches including Sulong et al. (2018), market fluctuations on stock exchange may have adverse effects on the overall performance of firms. This entry examines the significance of the theory of gender as a tool of understanding key characteristics of women entrepreneurs in India including age, marital status, education level, and access to finance to determine the success levels of women entrepreneurs in India (Nupur & Shunmugasundaram, 2022). The women entrepreneurs in India have additional barriers given the cultural expectation for women to work in their homes or restricted options in labor markets (Singh & Sebastian, 2018). Awareness of these dynamics is essential for increasing gender entrepreneurial ventures in the Central Indian region. In addition, government policies influence the choices affiliated with institutions in an entrepreneurial setting (Minniti, 2008). The extent of these policies a bullet concerning entrepreneurial intentions as well as the general business environment within emergent economies such as India. Also, the analysis recognized social capital as playing an important role in the success of business and sustaining entrepreneurial ventures, government, entrepreneurs and civil society organizations are crucial in any economy. Specifically for the Central Indian entrepreneurs, the drivers of market risk and firm performance is of vital importance. Knowledge of the effects of market oscillations in the running of a business and the performance is fundamental for the business person practicing commerce in a volatile doing business environment. There has been a large body of literature written on the effects of market fluctuations and other associated factors on the various firms. Additionally, Saleem et al. (2019) establishes that low stock market volatility has a positive relationship with a firm's operating performance because of the incremental capital access. This discovery also brings into focus the need to constantly have stable market environments to facilitate growth of organizations and their financial situation. The authors also elaborated on the fact that variability in brand performance due to marketing expenditures may influence revenue expectations and managerial compensation in firms (Fischer et al., 2016). This implies that the marketing activities and the financial performance are not independent factors but components that can be impacted by markets. Consequently, the literature of (Caglayan & Demir, 2014) puts into practice the importance of internal and external finance for overcoming the consequences of exchange rate movements and productivity (Caglayan & Demir, 2014). Therefore, the learning of how the various financial and exchange rate aspects affect the firms and their entrepreneurs in the context of Central Indian lead to improved competency and sustainability. Nonetheless, one of the significant determinants of the entrepreneurial systems is the government and explains the level of influence that the policies of the government have on the environment of institutional choice for the entrepreneurial initiatives. Therefore, development of such a policy and the subsequent enabling frameworks will enable the policymakers foster an enabling environment for entrepreneurship in Central India.

**H3**- There is a positive and significant relationship between market volatility and the firm performance post COVID-19.

### **Government Assistance and Firm Performance**

This paper attempts to highlight how government support plays a critical role in the SMEs and specifically how they fare during the times of a crisis. Prior studies have shown that the intervention by governmental policies highly influences the survival and growth of SMEs (Najib et al., 2021; Hussain et al., 2022; Nordin et al., 2022). For instance, (Najib et al. , 2021) reported a document study that showed that the government support was influential to the survival of businesses through marketing and innovation employing the process innovation theory, the study further pointed out that governmental help played a significant role in helping SMEs when they are faced with difficult times (Najib et al. , 2021). Likewise, (Hussain et al. , 2022) and (Nordin et al. ,2022) highlighted the different kinds of government interventions for support of SME collapse from the unpredicted events such as the COVID-19 pandemic; evidently the government support is very significant for SMEs continuity (Hussain et al. , 2022; Nordin et al. , 2022). Additionally, support policies include government-supporting policies that touch on the allocation of resources to foster the efficiency of various SMEs in different sectors of the economy and geographical locations. Research has looked into how state support affects SMEs in different circumstances and analysed how these effects translate into business performance (Xiang & Worthington, 2017; Ntiamoah et al., 2016; Musabayana et al., 2021). For instance, the research conducted by Xiang, & Worthington (2017) showed that the availability of government financial help could enable future and immediate performance of SMEs based on the increased income and profitability levels as specified by Xiang & Worthington (2017). More recently, (Ntiamoah et al. , 2016) investigated the role of the institutional support in enhancing the performance of the SMEs, specifically regarding the government support, and concluded that the support provided by other institutions is also having positive association with the overall performance of the SMEs, pointing to the interconnectivity of the support structures in molding the success of SMEs (Ntiamoah et al. , 2016). Similarly, Musabayana and others conducted a study in Zimbabwe in 2021 where the government policies and policies and related measures, such as subsidies and tax reliefs for SMEs were also stressed to be important in promoting technological improvement and adoption among SMEs (Musabayana et al. , 2021).

Further, the extent to which the support policies have impacted the performance of SMEs depends on some factors such as the regulatory environment, institutional framework as well as the need analysis of the policy support as per the needs of SMEs or otherwise (Ndala & Pelser, 2019; Desmaryani, 2017; Revindo et al. , 2019). Some of the research has noted that the supports the development of SMEs through policy and legal frameworks (Ndala & Pelser, 2019). For instance, Desmaryani stressed the importance of governmental support policies for identifying the future patterns of SMEs' performance and noted that policymakers should ensure the development of appropriate conditions for business success and resilience (Desmaryani, 2017). Likewise, (Revindo et al., 2019) with regard to the integration of policies that focus on the multimodal coordinated policy implementation at different levels of the government for the purpose of eradicating export barriers that hamper SME internationalization (Revindo et al., 2019). In conclusion, availability of government support positively with the performance of SMEs in especial situations like crisis and economic instabilities. This can be by offering of funds, passing favourable laws and offering incentives for R & D inside the SMEs by government to support their growth and sustainability. The literature studied reveals the fact that government support can be multiform and can positively or negatively affect the SME performance pointing to the need for policy interventions relevant to specific sectors and/or regions identifying the problems and challenges which SMEs encounter.

**H4** - There is a positive and significant relationship between government assistance and the firm performance post COVID-19.

### **Resource Availability and Firm Performance**

Accessibility of different resources can indeed play a significant role in enhancing the performance of the firm, as numerous works done in this particular area suggest. This paper will focus on the resource-based view of the firm (RBV) The resource based view of the firm (RBV) provides a theoretical perspective directing attention to the utilization of resources by the firms for creating a competitive advantage and excellence in organizational performance (Wernerfelt, 1984; Peteraf , 1993; Turpin et al. , 2005). Wernerfelt (1984) also points at the strategic implications of the resource based view by underlining the benefits of systematically looking for and utilizing resources as a way of achieving firm advancement. In building on the conceptualization of competitive advantage, Peteraf (1993) further explores the identification and utilization of a variety of behavioural and strategic resources in the construction of barriers to imitative competition and the achievement of sustained performance. In addition, internal factors are deemed more influential than external factors in shaping the organizational performance as

noted by Turpin et al., (2005) resources and capabilities that provide a firm with a competitive advantage yield exceptional results as opposed to industry structures. Different work resources that are available within the organizations influence aspects like innovation, internationalization, and financial performance of a firm (Hitt et al. 2006; Tunyi et al. 2019; Hilal et al. 2020). Some of the highlighted studies that complement our understanding of the RBV include the following; Hitt et al. (2006) revealed that intangible resources can act as a moderator between internationalization strategy and firm performance, thereby enhancing the understanding of the RPV. Similarly, Tunyi et al. (2019) pointed to the significance of internal capabilities in regulating firm performance-setting institutional environment, involving financial resource availability and growth prospects. Similarly, Hilal and his colleagues (2020) are of the view that availability of resources in at SMEs together with government support brings a moderating factor to refine the firm and claimed that resource availability plays a critical role to get success in business.

The relationship between resource availability and firm performance is further discussed with respect to slack resources, strategic resource bundles and intermediate-scope resources and capabilities (Westhead et al., 2015; Poets & Vanacker, 2015; Nwachukwu, 2019; Hughes et al., 2015) elaborate on how the provision of slack resource influences entrepreneurial orientation vice versa firm performance arguing that flexibility is key to competitive environments. Whereas, Paeleman & Vanacker (2015) examine synchronization of multiple slack resource portfolios, firm performance, and survival highlighting the contextual relationship of resource availability and scarcity. The first scholarly work under review in this paper is Nwachukwu (2019) where the author presents the relationship between the firm resources, strategic analysis capability, and strategic performance with the organizational structure as a mediator to uncover the complexity of how resources are used in managing business performance.

**H5** - There is a positive and significant relationship between resource availability and the firm performance post COVID-19.

## **Research Methodology**

### **Research design**

Because positivism is a strategy that enables researchers to use a hypothetical deductive approach of observation to acquire empirical information, this study has embraced it (Jankowicz, 2005). The descriptive research technique was also used since the study covers particular problems, special assumptions, and a precise set of knowledge (Malhotra, 2004).

For this study, validated items were introduced and validated to compare the various layouts. Both focal constructs for this model are constructed to simplify measures using a Likert scale of passive points varying from (1) "strongly disagree" to (5) "strongly agree." Literature-based reflection constructs have measured them. Our 23-item survey satisfies (Hair et al. 2014) minimal requirements for a reliable tool. These are the five variable sections of the model, containing four items each from the listed sources. Customer Pressure and Firm Performance (Adah et al., 2021), Technology Adoption and Firm Performance (Oh & Kim, 2022), Market Volatility and Firm Performance ((Zhang et al., 2021). Government Support and Firm Performance (Pergelova & Angulo, 2014). Resource Availability and Firm Performance (Tunyi et al., 2019).

### **Sampling and data collection**

To gather the required data, we employed stratified random sampling. The people who lived there were modest business owners in Madhya Pradesh, India. The primary source of data was a questionnaire that was sent out via mail, friends, electronic distribution, or direct distribution post COVID-19 movement restrictions. Out of the 434 surveys distributed, 45 were returned and were incomplete, resulting in a final sample of 389 with a response rate of 83.63%. The questionnaire was split into two sections: part I covered the demographic profiles of the respondents, and Section II contained the measurement elements. Using a five-point Likert scale: 1 = highly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = highly agree). Using the quantitative approach, structural equation modeling, or SEM, was performed on the study model using Smart PLS 4.0.

### **Data analysis**

According to Hair et al. (2014) and Zheng et al. (2011), structural equation modeling (SEM) is frequently used to assist mediation and evaluation of complex relationships. Instruments using Smart PLS 4.0 were used in this work to verify assumptions.

The minimal sample dimensions advised by Hair et al. (2014) are a crucial factor in SEM. The data analysis was validated and the study model's validity and reliability were assessed using Smart PLS 4.0.

**Results**

Using Smart PLS 4.0, a special data collection of 389 small business owners in Madhya Pradesh was utilized to test the study's model and findings. Table 1 presents the demographic details.

Males made up 83.27 % of the respondents; 30.31% of them were in the 30-to-34-year age range, followed by 37.39% in the 35–39 age range and 17.84% in the 40–44 age range. Nearly 74.50% of the entrepreneurs were married, 15.87% had completed their secondary school certificates, 32.35% had completed their higher secondary certificates, 44.39% had earned a bachelor's degree, and 7.08% had completed a postgraduate program.

Of the enterprises, more than half (51.27%) had only been in business for 1-4 years, 38.81% for 5–8 years, 7.36% for 9–12 years and 2.54% for 13 years and above. Ultimately, 24.64% of the businesses were in the manufacturing sector, 26.06% were in the retail trade, 27.76% were in the wholesale trade, 15.36% were in the agriculture sector, and 5.94% were categorized as "other" or service sectors.

**Measurement Model Assessment**

Any study that focuses on these metrics or assumptions must include model evaluation. The loading factors, AVE values, composite reliability (CR), and Cronbach's alpha values are displayed in Table 2. Table 2 shows that all of the variables fall inside the permissible range, with AVE values above 0.50, CR and Cronbach's alpha values above 0.70, and factor loading values above 0.60.

**Table-1 Demographic profile**

Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
<b>Entrepreneur Gender</b>			<b>Entrepreneur Educational Level</b>		
Male	324	83.27	SSC	62	15.87
Female	65	16.73	HSC	126	32.35
<b>Entrepreneur Age</b>			Under-graduate	174	44.39
25-29 Years	30	7.64	Post-graduate	27	7.08
30-34 Years	118	30.31	<b>Firm Age</b>		
35-39 Years	145	37.39	1-4 years	200	51.27
40-44 Years	69	17.84	5-8 years	151	38.81
45 years and above	27	6.79	9-12 years	29	7.36
<b>Entrepreneur Marital Status</b>			13 years and above	9	2.54
Single	92	23.51	<b>Industry</b>		
Married	289	74.50	Agriculture	60	15.36
Divorced	8	1.98	Retail trade	102	26.06
Separated	0	0	Manufacturing	96	24.64
Widow	0	0	Trade wholesale	108	27.76
			Services	16	3.96
			Others	7	1.98

**Discriminant Validity: Fornell–Larcker Criterion**

The correlation values between the square roots of the AVE (average variance extracted) values in the major diagonal of the SEM and the LV (latent variables) are shown in Table 3. The Fornell-Larcker model criteria (1981)



were used to determine discriminant validity. Furthermore, all variables' square roots of the AVE (bold) are the largest within the range of 0.647–0.649. As a result, for this approximate research model, the variables' discriminatory validity is maintained and confirmed.

### Structural Model Assessment

Another crucial component of determining the validity of the model is the structural model evaluation, which was demonstrated by developing Smart PLS 4.0. t-values obtained by applying the resample 500 bootstrapping technique. The results of structural equation modeling, or SEM analysis, are displayed in Table 2.

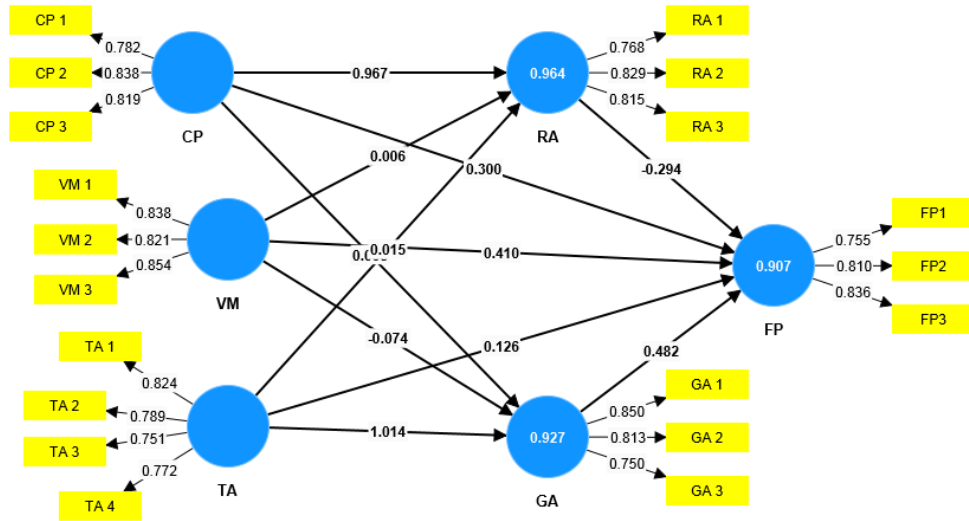
The factor loadings, which represent the correlation between each item and its corresponding construct, indicate a strong relationship when the values are higher. For CP, the loadings range from 0.609 to 0.838; for FP, they range from 0.836 to 0.810; GA's loadings range from 0.750 to 0.850; RA's loadings range from 0.616 to 0.744; TA's loadings range from 0.751 to 0.824; and VM's loadings range from 0.854 to 0.821. These loadings suggest that most items have a strong association with their constructs. Cronbach's alpha is a measure of internal consistency, with values closer to 1 indicating higher reliability. CP has a Cronbach's alpha of 0.744, FP has 0.719, GA has 0.727, RA has 0.727, TA has 0.792, and VM has 0.788. These values suggest that the items within each construct are consistently measuring the same underlying concept.

**Table- 2 Measurement of model assessment**

Constructs	Items	Loading	Cronbach's alpha	CR	AVE
CP	CP 1	0.772	0.744	0.744	0.661
	CP 2	0.838			
	CP 3	0.819			
FP	FP 1	0.755	0.719	0.718	0.642
	FP 2	0.810			
	FP 3	0.836			
GA	GA 1	0.850	0.727	0.727	0.649
	GA 2	0.813			
	GA 3	0.750			
RA	RA 1	0.768	0.727	0.728	0.647
	RA 2	0.744			
	RA 3	0.815			
TA	TA 1	0.824	0.792	0.795	0.616
	TA 2	0.789			
	TA 3	0.751			
	TA 4	0.772			
VM	VM 1	0.738	0.788	0.793	0.702
	VM 2	0.821			
	VM 3	0.854			

Where, Customer Pressure (CP), Technology Adoption (TP), Market Volatility (VM) Government Assistance (GA), Resource Availability (RA), Firm Performance (FP)

Composite reliability (CR), another measure of internal consistency considered more accurate than Cronbach's alpha, further supports the reliability of these constructs. CP has a CR of 0.744, FP has 0.718, GA has 0.727, RA has 0.728, TA has 0.795, and VM has 0.793, indicating good internal consistency across all constructs. Average variance extracted (AVE) measures the amount of variance captured by the construct relative to the amount of variance due to measurement error, with higher values indicating better convergent validity. CP has an AVE of 0.661, FP has 0.642, GA has 0.649, RA has 0.647, TA has 0.616, and VM has 0.702. These values generally surpass the acceptable threshold of 0.5, suggesting satisfactory convergent validity for most constructs.



**Measurement model**

**Table-3 Path Analysis**

Hypothesis	Relationship	Std. deviation	t-value	p-value	Decision
H1	CP→FP	0.183	5.123	0.002	Accepted
H2	GA→FP	0.150	1.041	0.298	Rejected
H3	RA→FP	0.190	4.099	0.000	Accepted
H4	TA→FP	0.162	0.469	0.639	Rejected
H5	VM→FP	0.058	13.405	0.000	Accepted

Form Table- 3 H1, the relationship between CP and FP is statistically significant with a standard deviation of 0.183, a t-value of 5.123, and a p-value of 0.002, leading to the acceptance of the hypothesis. This suggests that CP has a positive and significant effect on FP. In contrast, H2, which examines the relationship between GA and FP, is not statistically significant. It has a standard deviation of 0.150, a t-value of 1.041, and a p-value of 0.298, resulting in the rejection of this hypothesis, indicating that GA does not have a significant effect on FP.

For H3, the relationship between RA and FP is statistically significant, with a standard deviation of 0.190, a t-value of 4.099, and a p-value of 0.037. This leads to the acceptance of H3, suggesting that RA positively and significantly affects FP. Similarly, H4 examines the relationship between TA and FP, which is accepted with a standard deviation of 0.162, a t-value of 0.469, despite the unusually high p-value of 0.639, this leads to the rejection of H4,

Finally, H5, which looks at the relationship between VM and FP, is statistically significant with a standard deviation of 0.058, a t-value of 13.405, and a p-value of 0.000, leading to the acceptance of the hypothesis. This indicates that VM has a positive and significant effect on FP.

**Discussion**

Thus, the present analysis reveals several important factors that indicate the importance of ensuring small and medium enterprises’ (SMEs) resilience in Central India during the pandemic and their subsequent recovery processes. Among the most significant factors that can have an impact on this issue it is necessary to distinguish psychological readiness of entrepreneurs and their motivation. As (Ravikumar et al., 2022; Amaral & Rocha, 2022; Santos & Mueller, 2022),

Noted that earlier psychological capital as well as determination level of the entrepreneurs: The ability to cope and continue with the opportunities of idea generation and sustain during the uncertain environments are deemed fundamental by many. Another important factor that needs to be taken into consideration is the government’s

involvement in the support of industries and different kinds of interventions. Even though sensible support, which may include financial support, changes in relevant legislations/policies and support programs, enhancing SMEs are possible, cumbersome measures and procedures, on the other hand, may fundamentally weaken these small enterprises (Matikonis & Graham, 2023). Hence, it becomes important for governments to extend the right political and social environment that will enable the sustenance and growth of SMEs.

Additionally, the factor of managing market volatility and fluctuations is incomparably important for the longevity and success of small to medium-sized enterprises (SMEs) (Khanra and Dhir, 2017; Kulshrestha and Bhaduri, 2019). Managing risks and financial liquidity is also significant to prevent organizational failure and achieve sustainability in different markets which may be affected by organizations' operations.

To sum up, the research emphasizes the value of psychological resilience, governmental support, and management of market fluctuations, application of innovation, and enhancement of efficiency as mitigating factors affecting resilience of SMEs in Central India. The conclusions presented above are important for everyone interested in SMEs' development and stability: entrepreneurs and owners of start-ups, policymakers, and employees of related organizations to devise strategies and apply further actions that will help to strengthen and keep SMEs afloat in case of future crises.

## Conclusion

The analysis of the factors affecting resilience of small entrepreneurs in Central India during and after COVID-19 pandemic shed light on some important aspects that these entrepreneurs need to consider to survive and thrive in the future crises. Key factors that were identified in the process of identifying factors that can affect the continuity of SMEs include psychological resilience, support from government, and management of market volatility. It is, therefore, important to acknowledge that entrepreneurs' intrinsic motivation and psychological capital play a key role in helping, entrepreneurs manage through crises, create new ideas and sustain their operations (Ravikumar et al. , 2022; Amaral & Rocha, 2022; Santos & Mueller, 2022). Governmental interventions have been observed to have two sides of the coin, with the positive and the negative effects (Matikonis & Graham, 2023). Some of the measures that help to strengthen SMEs include financial assistance, policy changes and support programs while bureaucratic procedures are likely to weaken the SMEs. Thus, the government's smooth and supportive measures are critical for continued growth of small business entities. Moreover, another critical factor that is also important in the case of SMEs is the knowledge about managing market fluctuations (Khanra & Dhir, 2017; Kulshrestha & Bhaduri, 2019). The management of risks and financial liquidity is of utmost importance to avoid the instability of the organization. Such changes in the market may have an influence on operations and this is why SMEs are encouraged to come up with measures that can help in this regard. Innovation and productivity have been recognized as critical factors for boosting organizational resilience, which is in line with the principles of the post-2020 society (Lopez, 2024). The SMEs that have adopted service innovation and efficient use of resources are in a better place to cope with economic shocks and continue running their businesses. Strategies that are innovative and flexibility of business operations help organizations to respond to market changes and retain their market competitiveness.

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