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A Discourse on Role of Digital Payments Adoption to Drive MSMEs Towards the Attainment of Sustainable Advantage

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Abstract: Massive level of transformation witnessed across Indian financial sector, resulted in ace payment technologies, which when adopted in a strategic manner can be a potential driver towards catalysing the actualization of digital economies and certain Sustainable Development Goals (SDGs). Considering the reach of Micro, Small and Medium Enterprises (MSMEs), they can be used as a pedestal to attain SDGs through integration of digital payment system within their business model. While studies exist that inspect the impact of various financial innovation on economic growth, only a few have focus on its impact on the sustainable advantage of MSMEs. The dearth of empirical studies, therefore, dictates the need of this study, to overcome the shortcomings of existing literature. In this study we use structural equation modelling. The results revealed that adoption of digital payment have a positive and significant influence on sustainable advantage, with information accessibility having moderating impact between this relationship.

Keywords: Digital Payments, Sustainable Development Goals, MSMEs, Innovation

1. Introduction

Digital transformations are witnessed in almost every sphere of life and businesses based in MSMEs sector are no exceptions to this change, in their quest of successfully sailing the dynamic digital economy wave. Digital technologies fuelling the transformations are capable of improving performance of business up to a substantial level (Ramdani *et al*., 2022). Integration of digital tools in business varies across firms in terms of sophistication involved, with small businesses experiencing their initial phase of digital transition by embracing some basic digital practices (OECD, 2021). Among array of digital ancillary services which has the potential to improve ease and innovation in business support activities, digital payment emerged as the most impactful business enabler helping businesses to address the ground level concerns of transparency besides better

management of operations (IAMAI, 2019). Digital payments are defined as a "collection of mechanisms and procedures that enables two or more parties to transact and exchange monetary value via electronic means" (Sanghita & Indrajit, 2017). Multiple policy interventions of Indian government- namely Demonetization, Goods & Service Tax and "Digital India" mission encouraged the usage of digital payment in MSMEs (Gupta and Dua, 2018; Athique, 2019; Ahmed and Haq,2019; Chakravarty, 2016). Further, globally digital payment usage underwent a significant boost as concerns associated with cash being a potential carrier for the covid-19 virus were raised (Kar, 2021). More so, paradigm shift in MSMEs business model in terms of technology adoption have multi-fold impact, apart from offering flexibility, customization, competitive advantage, this transformation would help in attaining Sustainable Development Goals (Sobir, 2020). MSMEs have immense potential to boost more impartial and fair economic growth. In this line of research Affandi *et al*. (2020) stated that with the existence of MSMEs, more avenues for participation in economic activities will be generated for the population. Besides, instead of embracing digital payment just as an alternate mode of payment focus should on designing and pursuing a well-planned adoption strategy, thereby leading to mutually derived benefits signified by a virtuous sustainable shift in the payment environment between the business and stakeholder associated with it (Apasrawirote & Yawised, 2021). Bolting digital payment system onto existing payment process can offer significant value in terms of gamut of improvement such as wider geographic reach and customer base, efficient accounting, and better market access (Buteau, 2021). Sustainable advantage as a resultant of embracing digital payment technology has both social and economic impacts. Any kind of digital innovation tools is not restricted to digital technology only rather it is also about the processes which are facilitator of transformations leading towards new course of action (Mendling, 2020). Notwithstanding the contribution of digital technologies in promoting enormous growth among MSMEs, role of information accessibility is of equal importance. A few studies have examined how information restraints affect technology adoption (Adegbola and Gardebroek, 2007; Dimara and Skuras, 2003). To be successful in their endeavours, firms are required to develop meaningful understandings, or to have access to superior information allowing them to explore and evaluate opportunities in a more refined manner (Ulhoi, 2005). Across most of the MSMEs based in developing countries, access to relevant information remains a constant challenge, in this piece of academic work effort has been made to study moderating impact of information accessibility between the relationship of digital payment adoption and sustainable advantage.

This study enriches and elaborate the research literature in the field of digital payment outcome studies, which helps to extend the knowledge and understanding of how technologies can promote the economic and social advancements. Meanwhile, it provides MSMEs managers with a strategic guidance for digital transformation to capture sustainable advantage.

In the following section, this study focuses on examining the relevant literature on digital payment adoption and sustainable advantage among MSMEs, and presents the foundation that information accessibility has pertinent role in decision making in context of technology adoption. In addition to this, a discussion of the methodology has been done. Finally, the study explains how adoption of digital payment technology contributes towards SDGs. This study is based on an analysis of data collected from the MSMEs based in tier2-tier3 region of north India. As per government of India, cities having population oscillating between 50,000- 100,000 are considered as tier 2 cities, while those with a population falling between 20,000 and 50,000 are categorized as tier 3 cities (Boddupalli, 2018).

2. Literature Review

2.1. MSMEs in India

Across the globe there are different criteria to classify or define micro, small and medium enterprises (MSMEs). Keeping the various developments in economy under check Ministry of MSMEs in India decided to reframe the classification in the year 2020 **(Table 1)** highlight the definition of MSMEs in Indian context (MSME Annual Report 2020-21). All the investments and turnover are considered in Indian rupees. MSMEs sector is branded as the spine of the Indian economy and accounts for around 27% of the GDP. As per the official data documented as of 31st April 2022, at present more than 6.33 crore MSMEs accounts for employability of approx. 11.10 people spanning across the nation (Mishra, 2022).

Table 1

Enterprise Type	*Investment in Plant & Machinery*	*Turnover*
Micro	Maximum 1 crore	Maximum 5 crore
Small	Maximum 10 crore	Maximum 50 crore
Medium	Maximum 50 crore	Maximum 250 Crore

2.2. MSMEs and SDGs: Role of Innovation

The United Nations defined the Sustainable Development Goals (SDGs) in the year 2015 as an arrangement to deal with future with the aim to

achieve human wellbeing and environmental preservation, asserting social inclusion, respect and human dignity (Nilsson *et al*., 2013). To attain SDGs MSMEs, have pivotal role to play through transformative business model involving innovative technologies (Shelly *et al*., 2020)

Open innovation has been defined as "a distributed innovation process based on purposively managed knowledge flows across organizational boundaries" (Chesbrough & Brogers, 2014). It provides insights into how firms can improve their innovation success by harnessing inflows and outflows of knowledge (Bogers *et al*., 2018). The pursuit to harness SDGs can provide push to open innovation. Open innovation has a capability to ballooned the tech-oriented performance of MSMEs in context of augmentation of business processes (Zhang, 2014). There is consensus among policymakers globally that across new generation of digital technologies innovations particularly in financial technology and digital payments ecosystems can play crucial roles in nurturing MSME access to formal finance and stimulating the achievement of the SDGs. For materializing this MSMEs needs to be included and must be provided access to last mile financial services (UNESCAP, 2022). More so, a study on the open innovation adoption of supply chains demonstrated that suppliers, manufacturers, and customers find the perks pertaining to open innovation (Bigliardi *et al*., 2010). To reiterate, digital technologies emerge as an enabler of radical changes in products, services, innovation processes, business models and the core of business activities in business ecosystems (Ayakwah *et al*., 2021). For the purpose of this study, we explore how digital payments adoption can drive the pursuit of decent work and inclusive growth (SDG 8) in MSMEs by strengthening them to build business, thus going beyond the domain of pure economic benefits and promoting innovation in MSMEs for value creation (SDG 9). which leads to development and competitiveness among MSMEs thereby reducing wage inequalities promoting inclusions (SDG 10).

2.3. Impact of digital payments adoption on sustainable Advantage in MSMEs

Technology has revamped the payment process in businesses, the digital payment application will support businesses in better management of finances in order to attain a desired goal. For that matter, it contributes in making profits so that the business performance becomes good, enhance the ability to timely identify and respond to changes in the economy and undertake decisions that will leads to innovative and well thought of solutions in the pursuit of improving the financial performance and sustainability of MSMEs (Prahiawan *et al*., 2021). Raharja *et al*. (2020) found

that within the Go-Jek's application Go-Pay digital payment has helped MSMEs immensely in the exploration and exploitation of prospects to access wide market diffusions. Researchers examining outcome of digital innovation in SMEs stated profitability (Bala and Feng, 2019), business model innovation (Bouwman *et al*., 2018) as outcomes in their respective studies. Further research discourse revealed that decrease cash management due to adoption of digital payment mode will promote customer satisfaction and inclusion through improved processing speeds (Amoah *et al*., 2020). Prihatiningtias and Wipraganang (2022) observed that in non-financial areas the use of mobile payments can enhance the performance of SMEs and ensure the endurance of businesses during pandemic. Effiom and Edet (2022) document the multiplier effect of financial innovations adoption in terms of increased access to affordable credit, transparency in credit allocation which impacts the growth of otherwise credit deficit SMEs, thereby impacting the development of economy. To reiterate, manoeuvring dynamic business landscape, smart cutting-edge technology can help growing small businesses to create and sustain competitive tactics and establish the solid foundation for long term growth with strong market presence (Akpan et. al, 2022). More so, Blakstad and Allen (2018) stated how Fintech with digital payments being one of its elements, could catalyse the development of new innovative solutions and digitized business models that can contribute towards SDGs. Notably, in order to stand against the competition from multinational companies SMEs needs to nurture the digital payment technology towards the curating of desirable economic and social impact (Chaffey *et al*., 2019). In essence, any digital innovation integration in business model is not an end in itself rather it comes into being during its use in process outcomes (Swanson, 2019). Since digital innovation in itself is technical-social centric (Mendling *et al*., 2020), for the purpose of research "sustainable advantage" in both social and economic aspect has been considered Therefore, in the present study following hypothesis has been framed:

Hypothesis 1 (H1). The adoption of digital payment services has a statistically significant impact on sustainable advantage in MSMEs.

2.4. Moderating role of Information Accessibility

We live in world of ever evolving information, in context of technology adoption acquisition of improvised information over period of time emerge as one of the important elements influencing the adoption of innovation (Feder & Slade, 1984). Access to rich information can have multi-fold positive benefits for MSMEs while the information asymmetries can have some major adverse outcome (Ropega, 2011). More

so, information access makes firms capable of developing a rational approach towards decision-making, and provide different prospects for exploration (Chen *et al*., 2015). Besides, the utility of technology is not the only dominant influencer of technology adoption, before that availability of information to scrutinize the expected gains associated with technology is of great relevance (Shiferaw *et al*., 2015). Undeniably, confrontations with potential failures while pursuing innovative endeavours in Case of SMEs are comparatively higher than bigger organisations, due to potential information asymmetries (Imran *et al*., 2019). Overall, the access to information impacts the decision- making process, based on this following hypothesis has been framed.

Hypothesis 2 (H2). Information Accessibility moderates the relationship between adoption of digital payments and sustainable advantage.

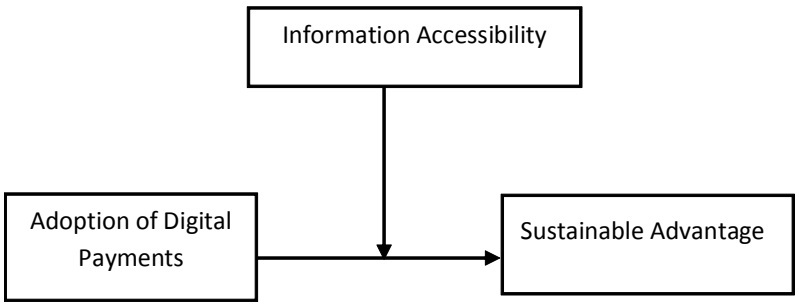

Figure 1: Research Model

3. Research Methodology

3.1. Questionnaire design and measure

A structured questionnaire was planned for data collection comprising two sections: firm characteristics. The first section measured the features of the firm like status held in the firm, manager or owner's educational level and nature of the firm **(Table 2)**. The second part of questionnaire measured three variables, wherein adoption of digital payments measured from (Kim *et al*., 2010), information accessibility (Imran *et al*., 2019) and sustainable advantage (Al-Omoush *et al*.,2018).

A Five-point Likert scale ranging between 5(strongly agree) and 1(strongly disagree) has been used in this study for ensuring uniformity. For the sake of enhancing the understandability, certain scale items are being improvised and additionally certain items are self -generated to cater to the need of the study.

Table 2: Sample Profile

Characteristics of the firm	*Frequency*	*Percentage*
Position in the organization		
Owner	306	48.0
Manager	332	52.0
Owner or Manager's highest level of education		
Secondary	190	29.8
Higher Secondary	232	36.4
Graduation	161	25.2
Post-Graduation	49	7.7
Other	6	1.0
Classification of firm		
Micro	440	69.0
Small	182	28.5
Medium	16	2.5

3.2. Sampling and data collection

For the purpose of data collection, participants included MSMEs which are having exposure/using some mode of digital payments. This cross-sectional study considers owner/manager of MSMEs based in Jammu, Samba and Kathua region. These MSMEs are being chosen from database of MSMEs registered with District Industrial Centre, with the target population comprising of 1168 units. The study chose Jammu, Samba and Kathua region because they are most active industrial hub in terms of industrial activities. Many MSMEs are operating in Jammu region under industrial clusters like Gangyal industrial area, Digiana industrial estate, industrial areas in Bari-Brahmana, Samba and Kathua. Further, structured questionnaire was distributed among 763 MSMEs owner/Manager using some form of digital payment mode and out of this a sample of 638 was considered for data analysis. In order to make the sample more representative and reliable MSMEs across different sectors were considered.

4. Analysis

4.1. Evaluation of the Measurement Scales

The reliability, validity and suitability, of the measurement scales used in study were confirmed with a series of exploratory and confirmatory analyses, using IBM SPSS 20.0 and AMOS 16.0, respectively.

4.2. Exploratory Factor Analysis

Firstly, we evaluate Cronbach's alpha indicator value to measure the reliability of the scales, with 0.7 as the reference value (Nunnally, 1975).

All the three variables scale indicate satisfactory Cronbach's alpha value ($\alpha > 0.8$).

Without any predetermined assumptions regarding factor structure, exploratory factor analysis has been conducted to investigate how the factor structure emerged (Child, 1990) provided scales has not been validated earlier in context of digital payments in tier 2- 3 MSMEs. Subsequently, on application of exploratory factorial analysis (EFA) using the principal component extraction model to test unidimensional nature of the scales, it was found that among three variable sustainable advantage have two factors. Through Kaiser-Meyer Olkin (KMO) measure of sampling adequacy, the test of appropriateness of factor analysis has been confirmed (Hair *et al*. 2010) wherein the KMO values of scale are above >.70. Further conditionality has been fulfilled by excluding the statements with factor loading < 0.50 and multiple factor loadings (Hair *et al*. 2010). After above assessment final instrument consist of three constructs namely adoption of digital payments with eight indicators, information accessibility literacy with six indicator and two factors of sustainable advantage namely economic impact and social impact with eight and six indicators respectively. Further, mean value of all three variable is above average (>3).

4.3. Common method bias

Prior to assessment of research model, Harman's single factor test was used to find the presence of common method bias. The common method bias is a phenomenon in research where "disparities in responses are driven by the research instrument rather than the actual predispositions of the respondents that the instrument tries to reveal". A dataset is said to be free from common method bias when the variance explained by single factor is less than 50% (Podsakoff, MacKenzie, and Podsakoff 2012). CMB is not evident in this study, as the total variance for a single factor of this study is 17.531% and the total variance explained is 61.769% which is greater than the required variance of 60% (Malhotra and Dash,2011).

4.4. Confirmatory factor analysis

For verification of the factor structure emerged in EFA, CFA was performed (Suhr, 2006). CFA was applied on 28 items defining three latent constructs of the study. Measurement model fitness has been evaluated by comparing the model fit indices with threshold limit of model fit indices. Measurement model fit indices considered comprise CMIN/DF, Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). As shown in **(Table 4)** measurement model had a satisfactory fit (CMIN/DF 2.88; GFI 0.909; TLI

0.918; CFI 0.932; RMSEA 0.058). For a model to be labelled as satisfactory its CMIN/Df should fall within the acceptable range of 0-5 wherein smaller values reflects a better fit (Gunday *et al*., 2011). Further, GFI, NFI, CFI values and RMSEA indicates a good fit as per the recommendation by (Hair *et al*, 2014).

Further authentication of measurement model is done by assessing it in terms of reliability- convergent validity and discriminant validity. Convergent validity essentially aims to figure out how closely the indicators of latent constructs converge or are related to each other through Composite Reliability (CR), Average Variance Extracted (AVE) and Standardized Loading Estimates (Hair *et al*., 2010). Composite Reliability of all constructs is (>.70) falling between 0.879 and 0.892, thus advocates the reliability of measures used. More so, the value of AVE and standardised loading estimates fulfils the recommended criteria of (>.50), clearly evidencing convergent validity and item S1 got deleted due to low SRW value **(Table 3).**

Table 3

Construct	*Items*	*Loadings*	*AVE*	*CR*
Adoption of digital payments	AD1	.682	.510	.892
	AD2	.724		
	AD4	.812		
	AD5	.757		
	AD6	.662		
	AD7	.672		
	AD8	.699		
	AD9	.694		
Information Accessibility	IA1	.630	.552	.879
	IA2	.874		
	IA3	.768		
	IA4	.584		
	IA5	.809		
	IA7	.751		
Sustainable Advantage			.519	.879
(Economic-Impact)	EI1	.766		
	EI2	.626		
	E13	.827		
	EI4	.693		
	EI5	.766		
	EI6	.705		
	EI8	.704		
	EI9	.641		
(Social-Impact)	SI2	.733		
	SI3	.904		
	SI4	.763		
	SI5	.744		
	SI6	.806		

Table 4

Model fit indices	*Measurement model*	*Structure model*	*Standard level*
Normed chi-square	2.88	2.99	<5.0
GFI	.909	.913	>0.90
TLI	.918	.945	>0.90
CFI	.932	.951	>0.90
RMSEA	.058	.069	<0.08

Discriminant validity aims to find out whether constructs of the study differ from each other. In this study DV is ascertained according to Fornell and Larcker by comparing square root of AVE with the inter- construct correlations of latent variable **(Table 5)**. In this study discriminant validity has been established since value of AVE square root is greater than correlations values (Malhotra, 2008).

Table 5: Discriminant Validity

	AD	*IA*		*SADV*
AD	.714			
IA	.111	.74		
SADV	.299	.126		.720
H1	Adoption- Sustainable Advantage	.33	***	Supported

H2 Moderation Effect of Information Accessibility

Independent Variable	*Dependent Variable- Sustainable Advantage*			
Adoption of digital payments	Variables	Model 1	Model 2	Model 3
	AD (Independent)	0.33***	0.31***	0.28***
	IA (Moderator)		0.09*	0.07**
	AD*IA(Interaction)			0.16*
R^2		0.10	0.098	0.11

Keywords: AD- Adoption, IA- Information Accessibility, *P<.05, **P<.001, ***P<.0001

4.5. Testing research hypotheses

As represented in **(Table 4)** Structure equation model (SEM) values are within acceptable range. Further, using Maximum likelihood estimation (MLE) Structure equation model (SEM) was performed to test the hypothesis, to find out whether the hypothesis of study stand accepted or rejected, standardized regression weight of each latent construct is being examined at the significance level of less than 0.05. Hypotheses results presented in **(Table 6)**, indicate that adoption of digital payment has significant and positive impact on sustainable advantage.

The moderating impact of information accessibility between adoption and sustainable advantage has been evaluated through product indicator approach and interaction effect size has also been calculated using formula recommended by (Chin *et al*., 2003). Under this analysis, three models were designed, Model I study the impact of independent variable (adoption) on dependent variable (Sustainable advantage), Model II (Main effect) assessed the impact of independent variable and moderator on dependent variable and Model III (Interaction effect) examined the total impact of independent variable, moderating variable and interaction variable (Adoption* Information Accessibility) on dependent variable. Information accessibility has significant moderating impact, however effect size (f^2) emerged out to be (.10), which is small in size. However, Aguinis et el. (2005) states that across majority of moderation test average effect size is only 0.009, against this background, statistically H1, H2 stands accepted.

Effect size f^2 = [R^2 (interaction model) - R^2 (main effects model)] / R^2 (interaction model)

5. Discussion and implication

To position empirical result with existing literature, a further discussion of result needs to be undertaken. Results of the study underscore the importance of digital payment technology adoption towards the attainment of Sustainable advantage in MSMEs. while majority of the scholarly discourses has focused more on economic aspect of advantage associated with digital payment technologies (Kwabena *et al*., 2019; Meher *et al*., 2020) in terms of growth and profitability. Further to ameliorate this, present study found that digital payment adoption accelerates the pace of financial inclusion in MSMEs which is in conformity with results documented by Bongomin and Munene (2021) in their study based on mobile money adoption in MSMEs. The gamut of outcomes linked with digital innovation adoption ranges from cost reduction (Tan *et al*., 2010),), customer satisfaction (Scuotto *et al*., 2017), competitiveness (Adeniran & Johnston, 2016), profitability (Bala & Feng, 2019) and internationalization (Pergelova *et al*., 2019), process (Peon and Martínez-Filgueira, 2020), and business model innovation (Bouwman *et al*., 2018). This holds true under present study wherein usage of digital payment aids better cash and business management saving cost incurred otherwise by businesses to reconcile discrepancies in accounts, potential losses due to frauds and long man-hours involve in manual settlement of payment transactions. More so, transacting digitally blurs the geographical boundaries while increasing the market reach of MSMEs and enriches the customer experiences. Across globe millions of MSMEs constantly face credit barrier, results of present

study advocates that transacting digitally improved the status of access to formal credit, however onboarding MSMEs on the journey of digital lending on the basis the rich payment data is at quite nascent stage in tier2-tier 3 cities. Digital wage payment to workers in MSMEs promotes well-being in supply- chain, this is line with the research conducted by (Chaintreau *et al*., 2018) wherein it is was found that workers concern regarding threat of carrying physical cash and formal mechanism of saving got addressed with wages being paid in digital mode. Information accessibility helps MSMEs in understanding the worth of digital payment technology and how it can promote the concept of sustainable enterprises. Yet, despite having access to authentic information related to digital payment technology, Some MSMEs still view this as a mere tool to transact ignoring its relevance in terms of core strategic tool towards broader digital transformation.

5.1. Theoretical Implication

This academic endeavour enriches the existing body of literature related to outcome of integration of open digital innovation in MSMEs. Most of the existing literature pertains to antecedents of innovation adoption in MSMEs, to the best of our knowledge research specifically exploring the socio-economic impact of digital payments adoption in MSMEs are very scanty. Moreover, in present study the moderating effect has been considered to enhance the depth of insights related to relationship between digitalization and its outcome in MSMEs and how the interplay of open innovation, MSMEs contribute towards sustainable development goal (SDG number 8, 9 and 10).

5.2. Practical Implication

This research study acknowledges the contribution of MSMEs in achieving SDG by integration of digital financial innovation. Our results highlight need of more coordinated efforts of stakeholders like government and Fintech companies to accelerate the pace of transition from cash to digital modes of payment. Availability of Payment data can help in calculating the credit score of MSMEs which will essentially help the creditors in designing the feasible lending plans considering the credit risk involved, consequently reducing the bad debts. Moreover, this study will create positive affirmations among MSMEs owner/manager to improve the status of digital payment system adoption within their respective firms.

6. Conclusion

To understand transformation, we need to understand process, in this academic work we investigate how transition in payment process from

cash to digital modes impact the MSMEs in terms of sustainable advantage. The study's inspiration was primarily arisen due to dearth of empirical evidence on this relationship. Our findings capture the essence of the few studies in African and South Asian nations as well as the general body of work in other regions, namely, that digital innovation has a positive and significant effect on the MSMEs growth. In the wake of these evidence, we recommend that the monetary authorities should expand the use of digital financial technologies instruments in the economy. Specifically, the government of India initiative of cashless society should be promoted and sustained so that MSMEs which are yet to consider the digital modes of payment could see the potential value propositions related with it from strategic perspective. Government might also consider undertaking policies initiatives, that would bring the huge numbers of MSMEs currently operating in the informal sector under the formal circuit, so that they can benefit from the advantages of financial innovation. These endeavours architects the ecosystem which through collaborative approach in form of policy interventions by government and innovative pursuits by private players can manage to amplify digital transformation among MSMEs, which would further contribute towards the SDGs. They can also address concerns beyond the dominant paradigm of credit availability, like information asymmetry, catalysing revolution in opinions, expanding market relations, creation of new employment opportunities aided by new age digital technologies. Adoption of digital payment technology is not devoid of consequences, but it is certainly not strategic until and unless deliberately engineered after thorough assessment.

Ethical Approval: In this study list of the registered MSMEs contacted during the study was provided by concerned department of J&k Government. There was no objection on their part and respondents involve this study. Further assurance has been given to respondent that the information provided by them will solely used for academic research purpose.

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