

Digital payments in Indian Petro-Retail: adoption & change in Landscape

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Abstract - Digitalisation has changed the way of operation of every industry influencing the efficiency and effectiveness at every stages. At the same time, the exposure of modern technologies, social media etc have also influences the behaviour, expectation of customers in general. Covid-19 pandemic has also accelerated the adaptation of digitalisation. Safe, secure & hygiene process as the need of the hour globally. Digital adoption has also seen a sea change in global market. One of the area where safe , secure and hygienic process which help the customers is the payment process and digital payment can hep in a big way. In global retail including Petro retail, adoption of digital payment is very high. Usage of digital payment in India has also significantly in general retail sectors. However, Petro Retail which has changed from “Product based” to “Service based” industry is also influenced with digitalisation especially digital payment. In this paper, we have tried to find out the adaptation of digital payment and its impact in Indian Petro retailing landscape.

Keywords: Consumer experience, Indian fuel retail, Petro retail, Technology in fuel retailing, Digital payment, contactless payment

I. INTRODUCTION

India ranked 3rd in energy consumption with 913 Mtoe consumed in the year 2019, after China and USA [1] and is also expected to be among the fastest growing energy markets. India has also emerged as the third largest market of global passenger vehicles with a CAGR of 9% for the period 2014-21 [1]. All this has resulted in enhanced focus on the Indian fuel retailing sector. Traditionally, fuels such as Petrol and Diesel have been sold in India at fuel stations operated by the oil company (oil marketing companies, ie OMCs) or their dealers & distributors. A fuel station (petrol pump) is a facility that sells fuel and engine lubricants for motor vehicles. The most common fuels sold in the recent decade are Gasoline (gasoline or gas in the U.S. and Canada, generally petrol elsewhere), Diesel fuel and Compressed Natural Gas.

In pre-independence and early years of post-independence era in India, fuel used to be made available as a commodity – as a basic requirement of customer. Price of petrol and diesel were regulated by government and fuel retailing was considered a commoditized business since most of the market share was with state run oil companies (PSUs) and there was less focus on customer needs. However, customer needs have evolved with the enhancement of exposure in technological advancement. Over the last two decades, there was a major change in the market structure of developed economies in terms of the transformation from an emphasis on the production of physical goods to the

production of intangible services. This is evident from the rise in service industry all across the globe. Further, fuel retail has also witnessed a major change from commoditized market to a service-based market globally, and this is equally applicable to the Indian context as well [2].

Over the last few decades, global retail has transformed significantly due to technological advancement, change in customer habits, expectations, etc. Accordingly, customer service has also undergone a major change [3]. Technology and the digital domain have also had a huge impact on consumer decision making process. Further, social media is playing an increasingly important role in marketing, and companies are using social media to strengthen their Brand and create more sustainable customer relationships [4]. Companies today increasingly use social media to connect with their customers in a more personalized and direct way. Moreover, there is an increasing trend towards sharing of customer information among different service industries in order to assess customer buying pattern, thereby designing and delivering suitable customized services to the target segments to enhance their customer experience with better service offer [5].

Rapid technological advancements as well as increasing exposure to digitization has led to a more evolved modern customer. Accordingly, customer habit, expectation & experience, in general have undergone a change and still evolving. Retail sector has witnessed a remarkable shift in the customer buying behavior due to technological

enhancement. There is an overlap among customers in retail and petro-retail as well. Customer behavior towards petro-retailing is also evolving. Given the above context of advancement of technology and customer habit, customer lifestyle, preferences and requirements, in general, have taken a shift and are still evolving. While petro-retailing has made some significant technology-led advances in the past few years, general retail is exploring technologies like VR for the average customer. Thus, a visible shift is observed in customer behavior and expectation with respect to usage & adaptation of technology in their daily life & buying journey [6]. Adoption of technologies like AI, big data, cloud, mobile technology etc in upstream part of Oil & Gas industry is quite mature. However, in the Indian context, the same is not very significant on the downstream side, particularly in the areas of customer identification, recognition, meeting their expectations of product/service mix etc. While General retail has made rapid advances in technology implementation and thus led to enhanced customer expectations, petro-retailing is yet to catch up. This needs very strong technology adoption & implementation. But this is not in line with the existing technology implementations currently underway in the Indian fuel-retail industry [7].

The coronavirus Covid-19 affected 210 countries and territories around the world and two international conveyances. USA, India, Spain, Italy, France, Germany, UK & Turkey registered some of the highest number of cases. The Covid-19 has generated important challenges in many sectors. Further, coronavirus spanned entire geographies, due to which governments had to take hard decisions like country-wide lockdown, to prevent the further expansion. The nature of Coronavirus infection also necessitated the need for mandatory social distancing. Lockdown brought all work to a halt including, but not limited to schools, colleges, theatre, mall, picnic points, restaurant hotel, tourism, transportation, railways, seaports, airports, industries, manufacturing companies fall slowdown etc. The life cycle routine was paused, with a strong impact on economy, worldwide [8]. Logistics restrictions due to covid-19 have had a negative impact on the lean-agile process of operational excellence [9]. COVID-19 impact on manufacturing industries is expected to result in reduced demand and disrupted supply chain flow. Further, Coronavirus is also producing opportunities for industries to rethink and renovate with changing time to remain relevant and agile. The operation can be redesign and restarted with key development in the operation sites [10]. Apart from the logistics and operation sides of the industry, micro-SMEs have also various opportunities in every crisis to work together for the good economy of its workforce, the business operation, and strategic plans for business sustainability. Despite all this, nations across the globe are facing similar complications. Micro-SMEs are unable to cope with immediate adjustments in the aspect of

business sustainability, such as managing and allocating resources, compensation issues and remotely implementing work from home. Micro-SMEs are concerned about business sustainability and are acting proactively towards the COVID-19 outbreak, with readiness in identifying critical positions, arranging crisis management, and decision-making during the crisis [11].

It has also been observed that Service Industries are transforming themselves into Green Business Industries in terms of their opportunities and challenges. It is believed that green businesses adopting newer technology, green products and green services are going to be sustainable due to their ability to maintain clean and sustainable environment.[12]. COVID-19 has had an immense impact on India's Service sector as well. One of such industry is education sector. Though the pandemic has created many challenges, various opportunities have also evolved. The Indian Govt. and different stakeholders of education have explored the possibility of Open and Distance learning (ODL) by adopting different digital technologies to cope with the present crisis of COVID-19 and such technology-based platform shall be helpful for the education system to sustain COVID-19 like situations in the future as well [13].

Importance of safe use of technology by government authorities and research communities state that availability of sanitizer and hygiene products at work place is one of the obligatory measure. According to the industry experts, merging of software and automated technologies for the industry working and workers safety is anticipate to intensify the production capacities of the companies, along with the product quality with the limited spread of COVID-19 in the manufacturing facilities in the post-pandemic conditions to obtain employee and consumer confidence[14].

While it comes to mode of payments being carried out by the customer in the Indian Petro Retailing context, various modes are seen such as cash, Credit or debit cards, mobile wallets & apps, loyalty cards or apps of service providing companies. It is also observed that technological advancement has impacted daily life of the human being so as to all industries from logistics, manufacturing, and education to service industries. The payment methods have also been evolved in the same pace with technological advancement. Journey of evolution of payment method from Cash to cards to wallet & contactless payments is a see change in the arena [15]. The evolution of payment processes have also impacted petro retailing industry. In our study we are exploring the possible impact technology advancement & digitization in payment method have in customer buying behavior and experience in petro retailing industry in India.

II. FINDINGS & DISCUSSION

In a country like India where digitization is rampant with growth in internet and mobile users, proliferation of internet

enabled devices, affordable mobile internet, increasing use of mobile apps and favourable demographics, digitization in payments has gained significant momentum and has huge potential too. The global payments market is growing at a rapid rate and is expected to cross the \$2 trillion mark by 2020. Digital payments in India will more than double to \$135.2 billion in 2023 from \$64.8 billion in 2019. Also, India is expected to clock the fastest growth in digital payments' transaction value between 2019 and 2023 with a compounded annual growth of 20.2%. As per the study, India's share of worldwide transaction value of digital payments is also set to increase from 1.56% to 2.02% by 2023 (Financial Express, 'Digital payments market in India likely to grow 3-folds to Rs 7,092 trillion by 2025: Report, August 23, 2020). Home-grown Indian innovation around digital payments infrastructure including Unified Payments Interface (UPI), Bharat QR and mobile wallets have ensured last-mile connectivity, covering small merchants, tea sellers and even hawkers. India is showing rapid progress in transformation of digital payments is predominantly due to its large population and demographics. According to India Digital Payments Report by World line India, there are 3.72 million (as of March 2019) point of sale (POS) terminals in India. The average ticket size of debit cards and credit cards is INR 1,323 and INR 3,427 respectively on the POS terminals. There are 925mn debit cards and 47mn credit cards in circulation in India as of March 2019. And UPI is emerging as the fastest growing payment channel [16].

In the context of trends in digital payments ecosystem in India, consumers are rapidly switching to non-cash payment methods that provide simple and convenient ways to transfer money across bank accounts. Alternate payment channels such as contactless and wearable are gaining acceptance. Growth through lower cost terminals as well as asset-lite modes such as QR is also seen in growing trend. Near Field Communication (NFC) payments or otherwise known as contactless payments (or sometimes referred to as Tap-and-go) made through either NFC enabled cards and/or phones, is expected to pick up pace. Contactless payments offer a variety of benefits to both merchant and customers. Broad benefits which are observed are include (i) **Speed** - contactless payments can be completed within 15 seconds and work twice as fast as normal cards. With less processing and handling of cash occurring, transactions are completed at a faster rate, turnover is likely to improve and queues are less likely to build up. (ii) **Secure** - In case of physical cards, in case of loss or pilferage, the account can be frozen or the appropriate bank can disregard or amend fraudulent payments upon receiving information. In case of contactless payment, as the user only needs to tap the card onto the reader, the risk of fraudulent activity or theft is perceived to be a lot higher. However, built-in protections ensure that the same transaction doesn't occur twice by accident and that if intercepted, the details and numbers

linked to the card cannot be decrypted as unique numbers are used for transactions that don't correlate to card numbers. Also, with a limit set to a small amount unless changed, the customer is protected from larger, unauthorised purchases from being made. (iii) **Effortless** - Contactless payments aren't restricted to just cards. The NFC technology within contactless readers can interact with phones and connected accessories such as watches or rings, (iv) **Overall Customer Experience** - As a result of faster, more secure and effortless transactions, shops can see an increase in throughput and a reduction in abandoned sales as the average transaction value increases when a customer isn't constrained by the amount of cash they are carrying and the payment process is efficient. For the majority of contactless transactions, there is no verification or requirement to print out a receipt on authorisation unless asked for by the customer or if the transaction is of a higher value. This reduces the time a customer spends at the point of sale (v) **Brand positioning and increased revenues** - by offering contactless options to their customers, merchant not only promote a much enhanced customer experience, they can also offer value-added services, and thus differentiate themselves from their competitors [17].

Digital transformation has disrupted the payments ecosystem. Technology innovation around contactless payments have transformed the payment industry by providing concrete advantages and benefit to both merchants and consumers. Applying contactless functionality to traditional payment cards can enable a better customer experience based on convenience and ease of use. Furthermore, by promoting contactless payment, merchants can improve their operational efficiency through faster digital transactions and reduce time. The infrastructure deployed to process contactless payments are also certified and aligned with the latest security standards to ensure success[18].

While digital transactions particularly contactless, have been introduced in the market and are gaining a foothold, it is also very important to know the underlying technology in order to understand its scalability across different industries. Generally, there are two types of contactless payments in use. (i) **Contactless Cards** - generate a unique code for each transaction which makes the process safer. Since there's no requirement for a signature or a PIN, contactless payments come with a limit per transaction which is also known as Cardholder Verification Limit (CVM). The CVM is an effective way to protect users' account. (ii) **E-wallets**: electronic wallets, or enable users to make payments easily, safely, and conveniently. There are several mobile wallets available in the market such as Google Pay, Apple Pay, Venmo, Mastercard etc. Tokenization makes mobile wallets one of the most secure mediums to make payments. This technology's adoption could be part of a bigger transformation of digital financial services leading to (i) Adoption of collaborative approach

between traditional banks and FinTech companies (ii) Increased digital innovation with open banking and (iii) Enhanced personalization and customer experience [19]. As transactions on contactless cards are done without any security code, there is a risk that an unauthorised transaction may go through without authentication. Moreover, incidents of online financial frauds have increased manifold with the increase in online transactions during the pandemic. Several cyber security experts came together to deliberate the risks attached to contactless payments, as well as to design a strategy during this pandemic to safeguard people from such frauds. It is absolutely important that merchants, payment solution providers and vendors to look into the adoption of Data Security Standards to help protect their customer's payment data [20].

Contactless payment was growing in popularity even before the pandemic, but it's clear that now, more than ever, consumers are eager to embrace any options that align with social distancing guidance. Google pay, Apple Pay, Samsung Pay, Pay Pal, Vemmo, Zelle, Cash App, Facebook Messenger are NFC, app based contactless payment options which are well versed across the globe [21].

In the Indian context, Digital payments have skyrocketed as India steps into Unlock phase. In the past few weeks, the Reserve Bank of India has announced several initiatives to enhance the digital payments space in India. These initiatives are being welcomed by industry players as it is expected to leverage technology, spur innovation, enhance system efficiency, and strengthen the acceptance infrastructure. While contactless, faceless, and cashless transactions are becoming the preferred choice among consumers and merchants, it is important to note that this trend started pre-covid and is now accelerating [22]. As the name signifies, contactless payments enable customers to make payments at payment terminals without swiping debit or credit card and without the need to enter your PIN either. Reserve Bank of India has hiked the limit for contactless payments from ₹2,000 to ₹5,000, making it easier to quickly make purchases by tapping debit and credit cards at merchant outlets wef 1st Jan 2021. However, users can customize their limits up to ₹5,000, or altogether disable contactless payments. [23]. Reserve Bank of India's decision to hike the limit on contactless payments without entering a PIN is expected to level the playing field in favour of cards [24].

Even before the COVID-19 pandemic inflicted a massive health and economic catastrophe, contactless payments were already a widely used payment method. However, once the businesses reopened post-Covid, it has become even more important to keep in mind the germ-conscious customers and adapt to the new normal of social distancing. Contactless payments have emerged as an essential solution for all the businesses as it enables them to drive their business forward along with ensuring safety to combat the

coronavirus pandemic. According to a survey that took place in mid-March 2020, around 30% of the respondents have started using contactless payments since the pandemic began and 70% of those users are likely to continue using contactless payments post- COVID-19. The study shows that the increase of around 58% of the people in the United States who are now more likely to use contactless payment methods than they were before the pandemic. At the same time MasterCard has witnessed a surge of 40% in the contactless payments in the first quarter of the year 2020-21 and 60% of VISA users who live outside of the US have used 'tap-to-pay'. 79% of the MasterCard users all around the globe have used contactless payments during COVID-19 pandemic. There has been a +40% of 'year to year' global contactless growth between Jan to March 2020.[19].

This rapid adoption of contactless payments has also impacted the banking sector of the US, as some of the biggest credit issuers like Bank of America, Citibanks, Wells Fargo, U.S. Bank, Capital One etc have increased their issuance of EMV cards. Visa estimates that more than 300 million contactless cards would be in circulation by the end of 2020. In Germany, contactless payments boomed due to the pandemic. China saw the highest adoption rate where e-wallet purchases were 23% higher than cash purchases. Contactless payments are now seen as an effective way for helping businesses to overcome the ill-effects of the COVID-19 pandemic. Even the seems to suggest the same. According to WHO, it is advisable to use contactless payments to reduce the risk of transmission [25].

The contactless payment has also been adopted by Oil & Gas majors. Exxon Mobile, Shell and Chevron are among the energy companies with pay-by-phone apps. Exxon and Shell also work with Apple Pay through their apps. Chevron has a limited number of payment options, but has promised in Chevron forum discussions in the App Store that Apple Pay is coming soon [26]. European oil major Shell has launched "The Shell app" with mobile payment, which lets the customer pay and save in one easy step by eliminating the need to carry multiple cards and by reducing the number of prompts you have to enter at the pump and in the convenience store. The app extend the benefits to the customers in terms of (i) **Speed**: Faster in and out of participating Shell stations; significantly fewer prompts ,(ii) **Convenience**: No need to carry multiple cards (iii) **Value**: Customer can earn additional Fuel Rewards program [27].

ExxonMobil continues to innovate at the fuel station, adding contactless payment to its stable of offerings on the forecourt. The oil company is rolling out its new two-in-one contactless payment solution using Near Field Communication (NFC) technology and QR codes. The implementation answers consumer demand for increased mobile payment options. According to the company, more than 11,500 Exxon and Mobil stations across the United

States will have this new technology at gas station pumps by end of year to enable customers to "point and pay" using their smartphones. In the past two years, ExxonMobil has introduced several new technology-related solutions, beginning with the launch of the Exxon Mobil Rewards+ program in 2018. Most recently, the company rolled out contactless payment options with Amazon's "Alexa Pay for Gas" [28].

Fuel station operators are facing a critical junction. Customers increasingly expect to pay using their preferred payment method. And this extends to payment at the pump. Cost, infrastructural and technical challenges are daunting for large chains, let alone independents. That said, offering more payment choices will undoubtedly pay off in the long term. Accepting alternative payments probably won't make the act of fuelling up more enjoyable. But it'll make the experience quicker, safer and more convenient. Ultimately, that's better for consumers. And better for gas station operators too [29].

In the Asian Context, Phoenix Petroleum, Philippines, introduced contactless payments and they are the first retailer in Phillipines to include four different forms of e-payments and a total of 100 Phoenix gas stations all now allow payment via Alipay, GCash, GrabPay, and WeChat Pay through QR code scanning. The move came as part of the company's tightened safety protocols across its businesses to help stop the pandemic [30].

In Indian context, Bharat Petroleum Corporation Limited has come up with a contactless mode of payment known as NFC. Apart from the contactless payment options already available in India, this quick 'tap and go' facility also helps consumers to keep their financial data confidential alongside health safety, as it never leaves their hand [31]. State Bank of India, a state run bank, and Indian Oil, a state run oil & gas major in India launched the contactless RuPay debit card, for secure & convenient contactless payment using "Tap and Pay" technology. It has now becomes the responsibility of every sector to contribute to the safety of citizens and their consumers, keeping the safety of both in mind [32].

Digital Payment has emerged as a fool proof way for businesses and enterprises to operate in the new normal post COVID-19. In the coming days, we might see acceleration in the adoption of contactless payments. This might also result in rapid innovations in the contactless technology that might encourage FinTech start-ups and enterprises to heavily disrupt the financial sector [19].

Under the Government's 'Digital India' initiative, OMCs have laid a strong emphasis on increasing the share of digital transactions. However, for a lot of customers, cash still trumps the inconvenience of having to swipe a card, enter pin credentials. Also, this does not cover the health risks inherent in routine interactions at the petrol pump for

fuelling. Covid-19 has changed conventional customer expectations, transitioning the above from a nice-to-have to a must-have. Given the multiple interaction points in a conventional fuelling transaction, such as conveying the fuel type, fuelling amount, making payment post-fuelling, Covid-19 infection risks are high. However, these can be minimized to bare minimum if a solution such as contactless payment is implemented [33].

In 2018, the Bank for International Settlements (BIS) ranked India seventh among the 24 countries where it tracks digital payments. Around 67 million payments were processed per day in India that year—about one-eighth of China and one-seventh of the US. This marked an eight-fold growth in just six years: only China had a better growth rate. But India still has much distance to cover in financial inclusion. In 2018, the latest year for which BIS data was available, it was ranked last in per capita penetration and frequency of use, with just 18 digital transactions per person per year. This was less than half of Saudi Arabia (38) and Mexico (40). Though digital payments have shot up since 2018, India is far from the likes of China (142), the US (495), and Singapore (831). India is also one of the fastest-growing markets in digital payments, albeit on a smaller base. New innovations mean India is leapfrogging the debit and credit card generation of digital payments systems. Only about 33% of India's population above 15 years owns a debit card, against 92% in Singapore, 87% in Japan, and 67% in China, according to the World Bank. On this path, China has shown the way, relying on new payments infrastructure to increase penetration. With payments now possible even without a smartphone using USSD 2.0, the UPI and digital payments story in India can only go further upwards [34].

Overall India has witnessed increase in usage of contactless payment option like UPI, IMPS, Bharat Bill Pay, AePS etc during Covid-19 lockdown period across. Number of transactions under all the channel of contactless payment have increased significantly. The digital payment such as AePS (Aadhar enabled Payment System) have shown growth phenomenally from 18.2 crore of transaction in March 2020 to 29.8 crore in Sept2020 and in terms of value it has almost doubled in this period.

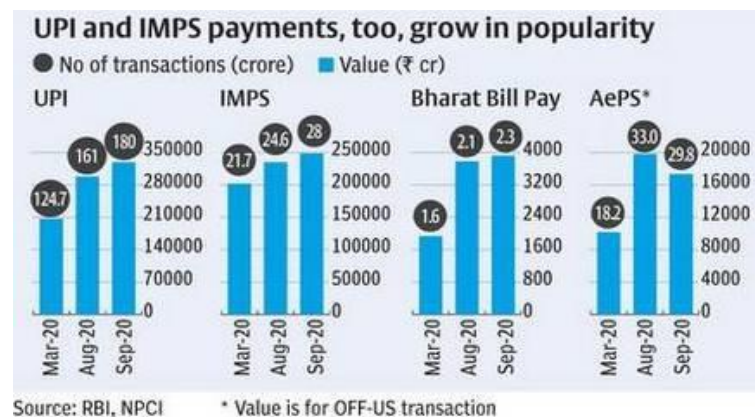


Table -1

Month	ATMs		POS	Credit Cards				Debit Cards				
	On-site	On-line	No. of cards (Lakh)	No. of Transactions (Lakh)		Amount of transactions (Crore)		No. of cards (Lakh)	No. of Transactions (Lakh)		Amount of transactions (Crore)	
				ATM	POS	ATM	POS		ATM	POS	ATM	POS
Jan-20	210195	5074373	574	3.68	771.24	159	20858	8294	2997	2083	135542	22998
Nov-20	209282	5418759	601	4.64	1662.57	231	62350	8927	6097	3790	313749	67357
Growth	0.4%	7%	5%	26%	116%	45%	199%	8%	103%	82%	131%	193%

(Source : RBI Annual Report , 2020)

Indian digital payment sector is increasing in general. Growth POS usage in market is more than that of ATM. Online transactions have taken a growth path which indicates that customers preferences are shifted to digital payment instead of cash mode of payment. The usage of credit & debit cards have shown remarkably , specifically their usage on POS where growth (in terms of amount) is more than 190% which indicate that people, in general, are switching towards digital payment. At the same time usage of digital payment in Petro retailing in India has increased by 9.57% from Feb'20 to Jan'21 and not in line with the overall growth in general [15] .

III. CONCLUSION

The Indian fuel retail market has undergone a sea-change over the past few decades. It is downstream retail which has witnessed the huge change. A large part of it has been driven by deregulation, transitioning petrol and diesel from commodities to brand-driven products. Alongside, enhanced customer expectations driven by the economic growth in the past two decades have also had a major impact. Thus, fuel retail as an industry has transitioned from Distribution (as a marketing function controlled by the government) to holistic/integrated marketing, driven by the need to fulfil customer expectations.

Currently, cash is the major mode of payment in any industry, shops etc. Handling cash leads to proximity; physical handover of cash increases the chance of contagious infection and compromises the safety in COVID -19 situation. The pandemic situation has called into the question the assumption of cash being the ultimate liquid assets. Digital payment has shown the path for minimising cash handling. Taking this approach forward, contactless payment gone one step ahead to ensure a complete touchless payment process, thereby enhancing safety & security in the payment process. Indian central bank (RBI) and the government have also taken steps for enhancing the usage of contactless payment, keeping in mind the efficiency & hygiene at fuel stations. While usage of digital payment has shown sharp increase across the globe, oil & gas majors abroad have adopted the technology in one form or another. The disruption of COVID 19 has allowed the business to step back and reconsider their payment protocols for

inclusion of digital from a streamlining and ease perspective. However, in Indian petro-retailing context, the adoption seems marginal though there is increase in digital payment and service provider companies are adopting various modes of digital payment option at the fuel station. Digital & contactless, safe fuelling approach is the need of the hour. Wide-spread adoption of such alternate payment solution will help to create a safe and secure fuelling environment for customer visits. Moreover, market awareness of the existence of such a solution seems to be low. Thus, digital payment methods have been widely being accepted across the globe and overlapping of customer in petro retailing attracts requisite infrastructure in petro retailing as well to support. However, a clear gap seems to exist in adoption & implementation of various digital payment options which can raise the level of hygiene & safety at fuel stations, and help to enhance customer buying experience.

IV. SUGGESTION & RECOMMENDATION

In view of sharp increase in usage of digital & contactless payment methods by the customers, Oil Marketing Companies (OMC) in India should adopt various channels for acceptance of different mode of digital payment such as through mobile app, debit & credit cards, UPI, IMPS etc. The implementation of such adaptation shall lay the path for enhanced customer buying journey and lead to superior experience at the fuel stations. At the same time, this shall provide OMCs a competitive edge to sustain and grow their business.

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