Digital Transformation of Small and Medium Enterprises in Growth Economies - Antecedents and Consequences

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I hereby declare that this EFPM dissertation is my original work and it has been written by me in its entirety.

I have duly acknowledged all the sources of information that have been used in this dissertation.

This dissertation has not been submitted for any degree in any university previously.

Srinivas Rao Pingali, August 2020

This dissertation is dedicated to my mother Dr P Sunanda Rao

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Abstract

Small and Medium Enterprises (SMEs) are critical to emerging/growth economies around the world. They are essential for growth and employment generation and have been the focus of recent government policy in growth markets such as India. Digital transformation is critical for companies gearing themselves for the future and remaining competitive. Although existing research provides insights on the importance of digital transformation and its benefits for a firm's competitiveness and growth, there is a limited understanding of the antecedents and consequences of digital transformation in SMEs situated in growth markets (g-SMEs). The study examines this specific area and through extensive interviews with owners of SMEs and proposes a decision-making model used by SMEs to evaluate and implement digital transformation. The model includes the triggers for embarking on a digital journey, the constraints, and the benefits sought and gained as outcomes. The study focuses on traditional SMEs and not born-digitals or digital-natives as traditional SMEs form the largest proportion of the current SME population.

Key Words

small and medium enterprises, digital transformation, innovation, technology adoption, growth economies, change management

Introduction - SMEs

According to an OECD Report (Entrepreneurship at a Glance, 2017), Small and Medium Enterprises (SMEs) are the drivers for economic growth and employment contributing to up to 45% of total employment and up to 33% of (GDP) in emerging/growth economies[1].

There is no universal definition of SME, with each county adopting its own definition based on revenue, industry sector, and investments. However, the issues faced by g-SMEs are universal and cause them to be different from large companies. Table 1 provides a summary of the literature on challenges faced by SMEs.

Challenges	**How does this make them potentially different from large companies**
Availability of credit/capital (Yoshino and Taghizadeh-Hesary 2015)	*Limited resources – need to prioritise investments* *Inability to take risks*
Lack of market access (Doern 2009)	*Lack of scale and size to implement strategies* *Higher flexibility*
Inability to attract skilled resources (Nolan and Garavan 2016)	*No formal strategy teams* *CEO/Owner driven decision making* *However flexible and short decision-making process*
Regulatory and policy related challenges (Blackburn 2016)	*Need to implement digital to overcome regulatory challenges and exogenous shocks*
Lack of operational efficiencies (Laforet 2011)	*Need to implement digital* to increase *efficiencies and compete Need network relationships*

Table 1: Challenges faced by SMEs – Literature Review

To remain competitive, SMEs need to adopt intellectual capital, technology backed by corporate strategy and best-in-class supporting processes. There is a need for SMEs to adopt new generation business models that include digital transformation. A significant amount of

[1] https://oecd-development-matters.org/2019/04/23/smes-and-sdgs-challenges-and-opportunities/#:~:text=Recent%20studies%20show%20that%20small,both%20developed%20and%20developing%20countries.&text=Formal%20MSMEs%20contribute%20up%20to,GDP)%20in%20emerging%20market%20economies.

institutional efforts and business articles have focussed on this area in the recent past. However, due to resource constraints (Acs, Carlsson, and Karlsson 1999). SMEs need to prioritise their investments. Most SMEs do not have the resources to implement digital applications (Kannabiran and Dharmalingam 2012).

Emerging/Growth Markets

Emerging economies have been defined as markets with lower income, but with rapid growth driven by economic liberalisation (Hoskisson et al. 2000). Among emerging markets, countries such as China and India have shown sustained growth through the last decade and are sometimes referred to as growth economies. These markets have been found to behave differently from developed market (Roberts, John, Kayande Ujwal, and Srivastava, Rajendra 2015). The differences have been categorised into five dimensions – market heterogeneity, inadequate infrastructure, chronic shortage of resources, unbranded competition, and socio-political governance (J. Sheth 2011).

Digital Transformation/Digital Strategy/Digitalisation

There is no simple definition of digital transformation. It is **strategy-led digital technologies enabled business model disruption** that encompasses an entire organisation. Table 2 provides some definitions of digital transformation/digital business strategy.

Definition	Relevant Paper/Article
Organisational strategy formulated and executed by leveraging digital resources to create differential value	(Bharadwaj, El Sawy, et al. 2013)
A pattern of deliberate competitive actions undertaken by a firm as it competes by offering Digitally enabled products or services	(Woodard et al. 2013)
Digital transformation is concerned with the changes digital technologies can bring about in a company's business model, which result in changed products or organisational structures or in the automation of processes	(Hess et al. 2016)
Digital transformation strategy serves as a central concept to integrate the entire coordination, prioritisation, and implementation of digital transformations within a firm	(Matt, Hess, and Benlian 2015)

Table 2: Definition of Digital Strategy – Literature[2]

Digital transformation that started with technology firms, is rapidly being adopted across all industry segments. At that same time, given the vastness of the field, companies are confused about how to transform themselves for the digital age. Digital transformation is all not about implementing technology or solving discrete business issues (Kane, Gerald 2015). Digital transformation encompasses strategy changes (Drnevich and Croson 2013), business model changes (Downes and Nunes 2013)), process changes (Hess et al. 2016), and organisational changes (Bharadwaj, El Sawy, et al. 2013). However, digitisation of core processes is an antecedent to digital transformation (Unruh and Kiron, David 2017) and therefore equally critical and needs to remain on the focus of senior management. Benefits from digitisation can fund digital transformation.

Intense competition, entry of global players, disruption in business models, and evolving customer needs are forcing SMEs to rethink the role of technology across their operations. To

[2] Definitions in table are verbatim from literature.

remain competitive in turbulent business environments, firms need to look at digital transformation to provide them with dynamic capabilities. However, given the complexity of digital transformation and its implementation, SMEs are at very early stages of implementation (Hsu, Tsaih, and Yen 2018). There is also scepticism about the potential benefits and a threat to the business if not properly managed (Kohli and Melville 2019).

Figure 1 outlines critical artefacts of a digital organisation.

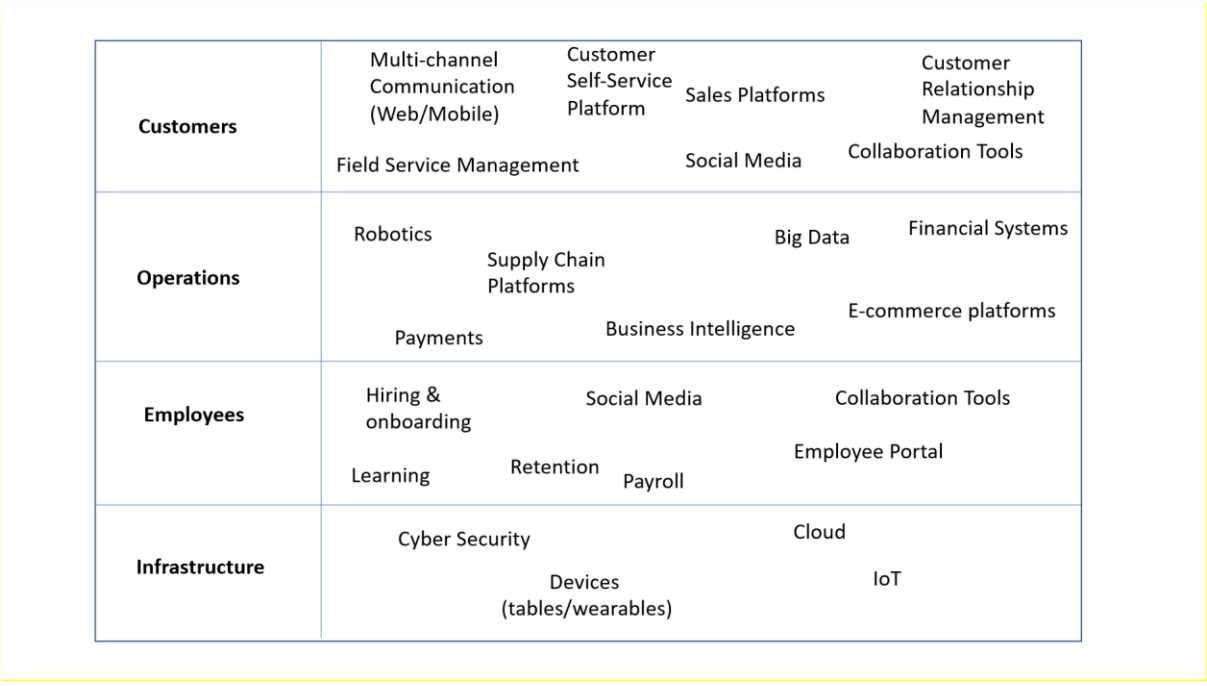

Figure 1: Digital Artefacts

The components of a digital firm can be broadly divided into four categories.

Customer Facing: This encompasses both the customer acquisition process as well as the customer management and retention processes. Social media, mobile and internet-based marketing have rapidly grown in emerging markets. Social media platforms such as Google Reviews, Facebook, LinkedIn & WhatsApp, and India specific sales platforms such as

Indiamart and JustDial have become key marketing tools for SMEs These platforms have instantly enabled SMEs access to mobile and online promotions. Formal Customer Relationship Management Software (CRM) are at early stages of implementation among Indian SMEs. International SME platforms such as Zoho, Sugar CRM and SutiCRM, industry specific CRMs (like Practo for hospitals/clinics) are making inroads into the market. Many of the companies also use Microsoft or Google cloud based solutions or custom-built software.

Operational: These include the processes and technology that form the backbone for delivery. Robotics and Internet of Things (IoT) based solutions for manufacturing, e-commerce platforms such as Alibaba for supply chain management are some examples. Supply Chain software is still highly fragmented and industry specific. For, e.g. POSist Enterprise Resource Planning (ERP) covers the entire gamut of supply chain processes for food services companies including ordering, inventory management, payroll and time-sheeting, menu and pricing management and accounting. These ERPs also have extensive data analytics capabilities. Ramco ERP, Tally ERP and Zoho Inventory are some of the other SCM software used by SMEs in India. Accounting software is also a key part of operating systems as is business intelligence tools that run across an organisation.
Payment options have expanded beyond traditional cash-based transactions to internet, card and mobile payments. Even the unorganised sector has moved very rapidly to accept mobile payments.

Employee Focus: Employee lifecycle management, from hiring to exit, forms the crux of this area. There are transactional elements like payroll and self-service portals and value-added processes like training and skilling.

Infrastructure: This is the area where most progress has been made, with the growing cloud adoption among SMEs.

Digital transformation consists of the implementation of a combination of the above artefacts to support strategic changes.

According to a report published by IDC (International Data Corporation), based on a survey of 3210 SMEs conducted in January 2016 across emerging markets, there is a clear connection between the digital transformation of SMEs and revenue growth. The report states that "*over half of fast-growing small and midsize firms are actively engaged with digital transformation*[3]."

While there has been academic research conducted on SMEs in growth markets and there is a growing body of literature on the impact of digital transformation on a firm's strategy, there is limited literature on SME digital transformation in growth markets. This research bridges this gap by answering the following research questions:

1. What are the drivers of SME digital transformation in growth markets?
2. What factors affect the implementation of digital strategies in g-SMEs?
3. What are the potential outcomes of digital transformation of g-SMEs?

[3] Quoted verbatim

Literature Review and Theoretical Models

In this section, prior literature on strategic change, digital transformation and technology adoption are explored. As there is limited literature available on the digital transformation of SMEs, literature relating to the digital transformation of large companies as well as technology adoption of SMEs has been studied in this section. Extant research has brought out the nuanced difference between a digital business strategy, that focuses on providing overall direction, and digital transformation that elaborates the steps to be taken to deliver the digital business strategy (Hess et al. 2016). As this study focuses on direction setting as well as implementation, both these elements have been studied while determining the antecedents and consequences of digital. The terms digital, digital transformation, and digital business have been used interchangeably.

Antecedents

There are a number of potential antecedents for a firm embarking on a digital path. The internal triggers range from a dynamic CEO wanting to bring about change, need for funding, need for growth and building process efficiencies. External triggers include customer needs, industry dynamics and competition.

External

Industry and competition: As stated earlier, digital strategy is about strategic change above all else, therefore competition plays a critical role in developing this strategy. Competition and industry dynamics are some of the key influencers for digital strategy (Mithas, Tafti, and Mitchell 2013).

A digital strategy is required by a company to either get ahead of competition or in many cases just to keep up with competition. As far back as the early 1900, Joseph Schumpeter

theorised that innovation and change come in waves (Andersen 2011) . Innovation creates temporary monopolies. This triggers other competitors to invest in catching up with the leader. Once they catch-up, the entire cycle is repeated and new innovator possibly takes the lead. Since, digital helps companies to innovate and get ahead of competition, it can be argued that the Schumpeterian cycle is very applicable to digital transformation.

Impact of industry on IT and digital can be further broken down into three components (Mithas, Tafti, and Mitchell 2013) – Industry Competition (Ray, Wu, and Konana 2009), Industry Turbulence (Pavlou and El Sawy 2006) and Industry Growth (Wade, Michael 2015). While there is overlap among these components, there are factors that are unique to each of them. While competition focusses specifically the dynamics that arise from what other firms in the industry (supply side) are doing, growth and turbulence (demand side) are more related to overall state of the industry. In other words, a company may reactively embark on a digital strategy based on what its competitors are doing (or not doing) or pro-actively based on the current state of its industry. In turbulent times, companies are forced to be agile and embark on strategic changes to survive. During industry growth periods, all companies are profitable and adding customers. The need for differentiation is less during these periods (Mithas, Tafti, and Mitchell 2013) and companies will invest in digital strategies only to the extent that it keeps them on par with the rest of the industry. Industry competition is determined by the number of players. If an industry has only a few players and competition is less firms, strategies are more likely to be copied by competitors (Bain 1951).

Customer Expectations: Customers are using digital in their personal lives are expecting the same technology and strategies in their business transactions. Companies are implementing digital strategies to provide customers with suitable products through convenient channels (Hansen, Rina and Sia, Siew Kien 2015) to meet these expectations. In B2B transactions,

customers themselves are undergoing a digital transformation, and they require their suppliers and partners to be in sync with them. Digital has enhanced customer expectations from their suppliers and merchants. This includes the availability of products online and across multiple channels, integration of supply chains or delivery, order tracking mechanisms, multi-channel and real-time reports and customer support. The only way a company can achieve all these is to go digital.

Enhance Customer Satisfaction: A need to improving customer experience is another antecedent for implementing digital strategies. According to a study by Accenture (Lemon and Verhoef 2016) improving customer satisfaction was rated as the top most priority among executives. Digital strategies enable an organisation to become customer centric(Setia, Venkatesh, and Joglekar 2013). There is considerable evidence that dissatisfied customers stop doing business with a company (Murthy 2009).

Governing agencies: As part of the boards of companies, governing agencies such as such Private Equity, Venture Capital and bankers play a role in challenging management to find new ways to grow and transform, while also approving broad funding decisions. Digital transformation drives growth and requires funding. As a result, these agencies play a significant role in the digital transformation of both start-ups as well as for scaling up (Cavallo et al. 2019).

Many digital start-ups focus on growing their user base in the short and medium term (Huang et al. 2017). In many cases, this is at the cost of profitability and therefore requires financial resources to sustain the “burn rate”. This further enhances the need for a good relationship between the company and its governing agency. Governing agencies play a role across the

digital transformation process. They are involved in encouraging the company to start its digital journey, provide financial resources, monitor the impact, provide strategic directions, help build networks and make course corrections. Governing agencies have the luxury of being involved in the digital transformations of multiple investee companies, across industries. They provide a company's leadership and management, strategic insights and best practices from these multiple industries. As described in the section on the role of leadership later in the document, leaders need to "listen" to non-competitors as well, in this age of disruption. Investors are a good source of such information. While prompting from investors is one of the antecedents for embarking of a digital journey, the reverse is also true.

Companies seeking funding start their digital journey to send a message to potential investors that they are on a growth trajectory. While there is very little research on this subject, there are a number of real-life examples of traditional companies using (or misusing) digital to look good to investors and obtain funding. Companies have also resorted to re-classifying existing business as digital to provide investor confidence.

Availability of third-party networks: In the recent times, most successful companies are moving away from being pipeline to platform companies (Alstyne, Parker, and Choudary 2016)**.** Large companies have internal resources to implement their digital strategies. Small and Medium Enterprises lack these resources. Even if these SME businesses were aware of the benefits of digital transformation, they were concerned about the associated risk of failure. As a result, SMEs have traditionally lagged behind larger counterparts in digital rollouts. However, this has changed with SMEs leveraging third party platforms (Banerjee and Ma 2012). Many of these platforms like Alibaba and Amazon specifically target SMEs and provide training programs. These have been referred to as Module networks (Srinivasan

A and Venkatraman N 2018). While the primary goal of harnessing these digital platforms is to access markets and suppliers, the interactions with these platforms provide SME owners opportunities to network with other business owners and share information and best-practices (Li et al. 2018). SMEs use this experience as a starting point to build their own internal digital capabilities. While these networks provide the initial path to a digital strategy, companies need to move to the next phase and build their own customised solutions to differentiate from other competitors. For example, an SME can start off its digital journey by leveraging Alibaba to source raw material. This will provide the SME with an initial competitive advantage. However, soon other companies in the industry start doing the same, and this edge is lost. To keep ahead of its competition, the SME will then need to build on the expertise it has gained from its interactions with Alibaba to build other digital assets to increase the efficiency of its supply chain process.

Governmental Support: In an attempt to boost the country economy and growth and generate employment, governments are encouraging companies to adopt digital strategies. Some examples are the Technology Hubs created by the Singapore Government, Bharath Craft, an Alibaba like platform being launched by the Indian government and the E-Power forum launched in Kenya to encourage digital transformation and provide the necessary tools.

Institutional environment has been defined "*set of fundamental political, social and legal ground rules that establishes the basis for production, exchange and distribution*"(L. E. Davis, North, and Smorodin 1971)[4]. It is critical for establishing polices that governs e-commerce and trade (Oxley and Yeung 2001). Direct intervention by central government, governmental agencies and industry bodies is critical for digital adoption, especially among

[4] Verbatim quote

SMEs. Trade and ICT policies go a long way to encourage digital adoption (Tan, Tyler, and Manica 2007). Other incentives that will drive the digital agenda include providing funding and subsidies and digital training. Governments themselves adopting digital will further be a trigger. Many countries as witnessing the co-evolution of governments along with institutions, organisations and technology (Luna-Reyes and Gil-Garcia 2014).

Internal

Availability of resources or resource munificence includes technology, capital and people. The concepts of design capital, an inventory of digital assets (architectural designs, software and data structures) and design moves (use of digital assets to implement digital strategy) has been used to provide a resource-based understanding of antecedents to a digital strategy (Woodard et al. 2013). Resource constraints, on the other hand, become barriers to a digital strategy, especially so for Small and Medium Enterprises (Acs, Carlsson, and Karlsson 1999). Technology standards is another key factor for SMEs implementing digital. Standards can be classified as inbound standards, and outbound standards, standards that a firm creates by implementing technology in its own adaptation or version. Studies have shown that availability of inbound standards enhance SMEs ability to implement technology (Paik, Kim, and Park 2017)

Economic value: A 2013 study by MIT has shown that digitally mature firms are 26% more profitable than those who are not. The quality of design capital is dependent of on Technical Debt, the cost of deploying a firm's design capital, and Option Value, the value that is can be derived from the digital strategy (Woodard et al. 2013). A firm digital strategy at any point of time will be a based-on evaluating Option Value with Technical Debt. A firm needs to

manage the tension between having the agility and flexibility of deploying its digital assets and the need to provide the best economic value (Woodard et al. 2013) .

Leadership: Digital transformation is high on the agenda of the senior leadership of companies, and leaders are critical to trigger the transformational journey. Studies have shown that digital leaders have leadership with a strong vision of digital strategy (Kane, Gerald 2015). There has been substantial research on transformation leadership (Judge and Piccolo 2004) and its contrast with transactional leadership. Individual characteristics such as hope, resilience and optimism have closely linked with a leader being transformational (Peterson et al. 2009). As digital transformation is multi-functional by nature, it needs a fulcrum. Traditional CIO/CTOs have managed functional roles and cannot immediately step-up to be the new fulcrums (Singh and Hess 2017)). Digital transformation requires a new mindset (Fitzgerald et al. 2013). The same study has shown that complacency among leadership is the primary reason for a company not adopting digital. Transformation happens top-down and not the other way around. While the role of Chief digital Officer is evolving in organisations, CEO are critical to provide the initial leadership for the transformation. The role of the CEO is to provide overall direction and be the fulcrum between the IT teams and functional leadership (Manfreda and Indihar 2019) and lead a governance process for the transformation. To provide overall direction, the CEO needs to "listen". Traditionally this "listening" was restricted to within a firm's industry and adjacent industries. With new business models and disruption, it is important for leaders to scan other industries as well. In this constantly changing business environment, CEOs need to have an adaptive leadership style (Danoesastro, Freeland, and Reichart 2017) where they are constantly receiving feedback and making course corrections as required. CEOs need to create a culture of open

innovation where newer digital strategies are constantly evaluated. Another characteristic of leadership that influences digital innovation is their age cohort.

Millennial led companies are faster to embrace new technologies (Hershatter and Epstein 2010). Millennials and digital natives easily embrace technology in both their personal and business lives. In traditional family run businesses, as the millennial generation take over or start playing a larger role, they start to bring in the concepts of digital transformation. Companies that are started by millennials are born digital and incorporate digital strategies from their inception. Another trigger for going digital, is that traditional companies suddenly face themselves competing against born digital companies or companies where the leadership had transitioned to millennials. The threat of being left behind increases their own need to digitally transform.

Need to globalise: Going global and exploring new markets is one of the key triggers of a digital strategy. SMEs export because they have the right resources and capabilities (Kamakura, Ramón-Jerónimo, and Vecino Gravel 2012). Traditional models show that SME start at domestic manufacturers and then evolve to exporters. Digital has enabled SMEs to bypass these stages and be "Born Global", especially in the technology space (Coviello 2015). Digital enables instant cross-border trade (Lund and Manyika 2016). This cross-border trade encompasses a whole variety of transactions. E-commerce platforms have enabled sourcing of materials from a global supplier base (Junge 2020). These platforms have allowed for companies to expand their markets outside of their national boundaries. In the pre-digital era, companies, especially SMEs, did not have the resources to go beyond their regional markets. Digital has enabled them to access these markets with very minimal set-up costs and effort and has also reduced the time to do so.

Another aspect of digital is accessing global talent (Pingali, Rovenpor, and Shah 2017). While this has been primarily in the services sector, digital platforms such as Flexjobs and Workmarket have allowed companies to source talent globally. Digital is used by companies, especially SMEs to source funds globally. A large part of this is for seed or start-up funding from platforms such as Kickstarter and other crowd- sourcing platforms (Kuppuswamy and Bayus 2015). Finally, companies have used digital to receive and remit funds globally through digital payment platforms (Gozman, Liebenau, and Mangan 2018) such as Paypal and Square. This is an important aspect for their globalisation.

Increase process efficiencies: A MIT Sloan report (2016) found that 80% of early stage companies stated that improving efficiency and customer experiences in the reason for their digital strategy**.** Digital artefacts help in increasing the efficiency of a company. A digital strategy helps in standardising and integrating various parts of the value-chain seamlessly (Hess et al. 2016). Digital helps to eliminate inefficiencies in a process workflow, automate manual interventions, provide reporting and monitoring mechanisms, predict process defects by pro-active monitoring etc. Internet of Things (IoT), robotics and virtual reality are some of the most significant digital tools for process efficiency enhancing tools (Salkin et al. 2018). The data that emerges from a digital implementation can be used to drive further process efficiencies (Berman 2012a). Digital transformation of supply chains has not only helped increasing current efficiencies but has also allowed companies build processes to launch t new products (Bharadwaj, Sawy, et al. 2013). Digital has allowed for companies to rapidly set up new supply chain networks and gain first mover advantage for new products. Implementing a standard digital strategy across an organisation including ERP, supply chain management systems can be complex and time consuming. However, once implemented, it

can lead to greater efficiencies and agility (Westerman and Bonnet 2015). An integrated digital strategy also aids quality improvement.

The benefits relating to cost savings and efficiencies are more critical to SMEs (Doherty, Carcary, and Conway 2015). This attribute maybe a bigger driver for embracing digital than it is for large companies.

Attract right talent: While implementing a digital strategy requires the talent, companies are using digital to attract the right talent. Younger workforce, especially millennials, need to feel that they are part of the next big opportunity (Justine, Gosling,Tom, and Sethi, Bhushan 2017) and therefore a company need to project that it is born digital company or on its path to digital transformation. The world "digital" has also been added into job titles to attract the right talent. A 2015 MIT Sloan study (Kane, Gerald 2015) showed that employees between the wide age range of 22 to 60 prefer to work for digital leaders.

Consequences of digital transformation

An antecedent for digital transformation triggers actions that has a direct consequence on the same attribute. For example, actions triggered due to customer dissatisfaction (antecedent) helps enhance customer satisfaction (consequence). However, additional consequences of the same antecedent can be growth and process efficiency. Thus, the impact of a transformation caused by a single antecedent can have multiple consequences.

The potential benefits of digital are multi-fold. One useful framework to understand the consequences of digital is the Reconnect-Rebuild-Reimagine-Re-evaluate framework (S. Gupta 2018).

Reconnect with Customers

Studies have shown that the primary impact of digital relate to customer (Fitzgerald et al. 2013). Growth and scaling in the digital era have taken a new dimension from what it has been in the past (Huang et al. 2017). Digital has allowed for growth at speeds that were not possible earlier (Brynjolfsson & McAfee, 2014). The measurement of growth has also changed away from traditional metrics such as revenue and profitability to user base and average revenue per subscriber (Prasad et al., 2010). Another key difference from the past is that digital provides growth through flexibility. (Kallinikos, Aaltonen, and Marton 2013) (Svahn, Mathiassen, and Lindgren 2017). This flexibility, in-turn, provides agility for innovation. Digital helps in the entire decision-making process from awareness of need to evaluation of choices to consideration of short-listed choices and finally decision making (S. Gupta 2018). It enhances growth by making companies more competitive (Mithas, Tafti, and Mitchell 2013). Digital helps in creating customer value propositions (Berman 2012a).

Digital strategy increases customer connect by providing the right product and the right place and right time. Through the use of big data, data analytics and Artificial intelligence, a retail company can provide customised products to its customers at the time right time. Omnichannel strategies make the buying process seamless and provide customers find a product at the place of their choice (Hess et al., 2016). Customers also use the various channels at different stages of their decision process (Verhoef, Kannan, and Inman 2015) based on their convenience. This provides companies with multiple touch points their customers.

Digital allows for companies to globalise rapidly. Ecommerce platforms have enabled access to global markets instantaneously. These platforms have allowed for easy cross-border transfer of digital product like books, music, other content and training. Digital has provided wrappers to physical goods. For example, IoT devices and RFID that allow for tracking of movement of goods have enabled flow of physical goods especially to and from emerging economies that lack infrastructure. Digital has specifically helped resource constrained SMEs to globalise and create micro-multinationals (Lund and Manyika 2016)

Digital also plays a significant role in enhancing customer satisfaction and retaining customers (Setia et al., 2013). It helps in both developing a customer orientation as well in customer response processes. Customer orientation relates to "listening" while customer response is more focused on "actions". These are achieved primarily through building technology and processes that provide information that is complete, accurate, about customers (Wixom & Todd, 2005). On the flip side, digital has dramatically increased the number of customer touch points and it has become a complex task for companies to manage (Lemon and Verhoef 2016).

Significant amount of literature has been generated in marketing journals, in the recent past, on how consumers regard digital and specifically their purchase behaviours. Digital marketing literature can be classified into four buckets consumer–firm interactions, firm–consumer interactions, consumer–consumer interactions, and firm–firm interactions (Yadav and Pavlou 2014). Research has shown that as consumers gain experience, they are willing to take more risk on purchasing products, especially of lower value (Kim and Krishnan 2015). Companies have learned how adjust their market mix based on search terms (Du, Hu, and

Damangir 2015). Regulation and consumer privacy related issues as a consequence of digital strategy has also been explored (Campbell, Goldfarb, and Tucker 2015).

Reimagine the business model

Business model transformation has three major components (Müller, Buliga, and Voigt 2018). First it is about how organisation design and conduct activities to provide value to their customers (Chesbrough 2004). Second it is about how companies interact with suppliers, partners and customers (Ng, Ding, and Yip 2013) . Finally, it is about how companies get compensated for their products and services (Massa, Tucci, and Afuah 2016).

Digital has increased agility and allowed for rapid development and deployment of business models tailored to customer needs. As a first step, digital transformation provides for better "listening" through artefacts such as data analytics and virtual communities of customers and suppliers (Sambamurthy, Bharadwaj, and Grover 2003). The next step is creating new products and services. Collaborative platforms and portals, supply-chain systems, etc. allow for rapid product development. Finally, digital allows for creation of new business models that are required for an effective "Go to Market" strategy. These business models, that can be built only with a digital strategy, also allow for newer segments like the long tail to become target segments.

Re-evaluate operations

While IS literature has focused on impact of digital and business models, there has been less focus its impact on R&D, production and process efficiencies and supply chain. A large part

of this literature is covered in Industrial, Production and Operations Management journals under research relating to “Industry 4.0”. Digital transformation has helped in implementing technologies that integrate business processes across a company and its suppliers and customers (Sambamurthy, Bharadwaj, and Grover 2003). As product lifecycles shorten and R&D costs spiral, concepts such as open innovation (Chesbrough 2004) enabled by digital are becoming more prevalent. Industry 4.0 has been used to describe the digital transformation of a production and manufacturing environment (Oesterreich and Teuteberg 2016). Technologies such as cloud, blockchain, IoT and Big Data are being integrated to build smart manufacturing (Trappey et al. 2017). The key dimensions of Industry 4.0 are interoperability, virtualisation, decentralisation, real-time capability, service-orientation and modularity (Gilchrist 2016) (Rejikumar G. et al. 2019). Industry 4.0 is expected to bring value creation opportunities for all types of companies. For a supply chain process, Industry 4.0 and digital integration, sometimes referred to as Procurement 4.0, provides for agility, dynamic co-operation and ability to operate beyond organisational and national boundaries (Glas and Kleemann 2016). At a production level, digital is expected to increase productivity, flexibility, allow for smaller batch-sizes and automate production decisions(Rüßmann et al. 2015, 0) . Big Data and analytics combined with IoT helps in proactive detection of errors and defects. This helps in increasing customer experience and customer satisfaction. One key area of concern with digital transformation of manufacturing process is cyber security (Raza et al. 2014). Increased connectivity has also led to cyber-attacks and downtimes of production systems causing both economic and reputational losses. As implementing digital and industry 4.0 is expensive, the development of solutions for SME by other SMEs is another key trend (Müller, Buliga, and Voigt 2018) that could emerge.

Rebuild the organisation

Digital transformation has a significant impact on workforce. Literature on this topic is largely covered under “future of work”. “Future of work” literature covers additional topics such as demographic shifts, urbanisation, resource scarcity etc. Directly linked to digital transformation, organisational literature covers three different topics, leadership, role of Chief Digital Officer and implications on workforce. Since digital transformation is multidisciplinary, it requires sponsorship of the leadership of the company. Leaders need to understand all aspects of digital and use it effectively. Leaders who do not embrace transparency and adaptive capacity are not likely to succeed (Bennis 2013). Adaptive leaders need to be able to steer organisations through situations for which no know paths or solutions exist (Heifetz et al. 2009). Leaders need to simultaneously manage exploration and exploitation to develop organisational agility (Hess et al. 2016). Leaders need to provide the vision for transformation and be the fulcrum that holds the company together during the process of change (S. Gupta 2018).

At the next level of an organisation, extant literature distinguishes the role of CIO and CTO with that of the CDO (Chief Digital Officer). Traditionally, CIO/CTOs have led all IT implementations including digitisation. Digital transformation goes beyond automation and involves strategy and business model changes and therefore requires a different mindset and skills (Fitzgerald et al. 2013). This has led to the emergence of a new role, the CDO. CDOs are have no IT implementation responsibilities and in most cases do not have even P&L responsibilities (Singh and Hess 2017). The CDOs primary role is to foster multi-functional cooperation to achieve the digital objectives of a firm.

Digital transformation has a large impact on the people strategy. At one level, the platform layer of digital including AI, chatbots and robotic automation eliminates the need for manual interventions and therefore the need for large teams. Learning functions within organisations have to leverage digital to provide training on innovation, change and agility in addition to skills required for digital transformation (Schuchmann and Seufert 2015). Specialist will be the most sort after employees (Justine, Gosling,Tom, and Sethi, Bhushan 2017). Organisation will be relatively lean and have larger number of outsourced and contract employees. digital platforms will be used to source employees and teams as and when required. HR. Networking and collaboration will be key for fostering innovation and agility (Berman 2012b). Creating a digital workplace that incorporate digital artefacts such as big data, cloud, AI can help in enhancing individual and organisational productivity (White 2012).

Innovation and Technology Adoption Theories

A number of seminal theories exist on adoption of innovation and technology such as Diffusion on Innovation (DOI) (Rogers, 2010), Technology Acceptance Model (F. D. Davis 1989), (TAM Theory of Reasoned Action (TRA) (Fishbein 1980) and Technology-Organisation-Environment (T-O-E) (Tornatzky, Fleischer, and Chakrabarti 1990). Among these models, only DoI and TOE are firm-level theories. Most of the theories focus on the technology aspects and neglect the social and psychological parameters of decision making (Awa, Ukoha, and Emecheta 2016) (Agarwal and Prasad 1998).

The DoI model is amongst the most cited innovation diffusion . The model describes the process in five stages i) Knowledge ii) Persuasion iii) Decision iv) Implementation iv) Confirmation. Early interviews suggested that most SMEs in emerging markets are in the first three stages and therefore DoI model in its entirety may not be suited to illustrate the current stage of digital adoption of SMEs. DoI also focusses largely on technology innovation. Research has shown that for a holistic business picture, technology needs to be combined with other external and internal resources (Wade and Hulland 2004).

The T-O-E framework is a holistic and industry friendly framework and has been used extensively in IS and innovation adoption research. The model encompasses three factors (Tornatzky, Fleischer, and Chakrabarti 1990):

Technology context: Availability of appropriate technology and the technology context. Technology includes hardware, software, capabilities and processes

Organisation context : Includes firm size, hierarchy, management style, human resources and slack

Environmental context: Incudes includes the size and structure of the industry, the firm's competitors, the macroeconomic context, and the regulatory environment

The T-O-E model is also consistent with the DoI model and includes the external context. As outlined in Table 3, the model has been used to study digital adopted in IS and other literature in the past.

Citation	Use of T-O-E
(Awa, Ukoha, and Emecheta 2016)	Adoption of ERP
(Alshamaila, Papagiannidis, and Li 2013)	Adoption of Cloud by SMEs

(Oliveira and Martins 2011)	Adoption of e-Commerce
(Cao and Li 2018)	Adoption of Omni-channel retailing

Table 3: Prior use of T-O-E model in digital adoption

The researcher proposes to use the T-O-E model integrating elements of the DoI model to study digital adoption among SMEs in emerging markets

Gaps in our Understanding

While there is a well-established body of literature on digital strategies, the extant literature focuses on individual constructs. Also, the literature is spread across IS, strategy, marketing, business and operations journals. There is no known academic work on developing an overall framework for digital strategy that includes both antecedents and consequences. This gap in academic literature gets amplified when the focus is shifted to SMEs in emerging/growth markets. SMEs are known to be different in their strategy formulation and technology adoption (Kumar et al. 2012) caused by a variety of factors including resource constraints and operational inefficiencies (Laforet 2011). Studies have also shown that companies in emerging/growth economies are very different from those in developed markets due to factors like their size, growth rates, differing customer needs (J. N. Sheth 2011).

At the same time, SMEs are very critical for growth and employment in emerging economies. Business articles have begun covering these topics extensively, possibly an indication of its growing relevance and importance. Therefore it is critical that academic work should respond to gap between academic and business press publications (Lamberton and Stephen 2016).

Research Methodology

A grounded theory research approach was used to develop a theoretical model (Pedada, Arunachalam, and Dass 2019) for the decision-making process of digital transformation in growth markets. Given the lack of literature in this area, a Theory in Use approach (Zeithaml et al. 2020) was used develop the model. Interviews with industry experts and Owners/CEOs of SMEs were conducted in an iterative fashion. A qualitative survey (Appendix 2) was administered to the respondents.

Sample

A total of fifty quantitative interviews were conducted with Owners/CEOs of SME companies in India. The interviews typically lasted 40-50 minutes and were transcribed into approximately seven hundred pages of text.

The interviews were conducted in three waves to allow for learnings from previous rounds to be incorporated into the discussion guide. In the second round of interviews, the role of external consultants in the digital journey emerges as key antecedents. Therefore, a few consultants were also interviewed. Finally, a few large corporates were interviewed to contrast the decision-making process between SMEs and large corporates. Digital start-ups and born-digital companies were excluded from the sample. The sampling was purposive to allow for a representation of all types of SMEs in terms of industry segments and digital maturity.

This included:

- SMEs who have embarked on digital and have seen some success
- SMEs are in early stages of digital
- SMEs who have not started their digital journey

Company Type	
SMEs Owners/CEOs	46
SME Consultants	2
Large Consultants	1
Large Corporates	1
	50

Break-up of SME Owners/CEOs

Further, SMEs (46) were classified based on the status of their digital journey.

Digital Journey	Definition	Number*
Digital Unaware	Unaware of digital	02
Digital Aware	Aware but not commenced journey	11
Digital Starter	Implemented some digital	21
Digital Proficient	Extensive plans for digital with some implementation	12

(* the classification of SMEs interviewed was based on the judgement of the primary researcher, post coding)

The interviews covered a wide variety of sectors including auto manufacturing, agriculture, agri-business, retail, traders, textiles, NGOs, training and education, and healthcare. The companies were a good mix of B2B and B2C firms. The SME were geographically spread across the country.

Analysis

All interviews were recorded and subsequently transcribed. The transcripts were analysed using NVivo software to arrive at first and second order constructs. The first level of coding (open coding) was conducted with the he researcher going through detailed transcripts and categorising into meaningful concept.

Two researchers coded the initial batch of transcripts and the integrated the results after discussing the major differences in coding. A uniform codebook was developed post this process and this was used to code the balance of the transcripts.

The second level of coding (axial coding) involved finding relationships between the concepts that emerged from the open coding. The second level constructs were conceptual/theoretical (Challagalla, Murtha, and Jaworski 2014). In the third stage, the researcher developed core themes around related axial codes to build an overall model.

In this step, the researcher compared themes with extant literature and refined them. The themes were fitted into the T-O-E model

The two coders verified the reliability of the coding process, based on a random sample of 10 interview transcripts. The inter-judge reliability was found to be .84 which is above the 0.7 threshold (Rust and Cooil 1994) the coding process.

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Findings of Study

The qualitative interviews and analysis provided the researcher the data to develop a comprehensive framework to illustrate the decision making model for SMEs on digital transformation using a modified Technology-Organisation-Environment Model. The researcher has extended the model to include realised impact of digital adoption. The model is comprehensive including all the factors that emerged from the study, However, seventeen propositions that are unique and novel factors to g-SMEs have been provided in the following analysis.

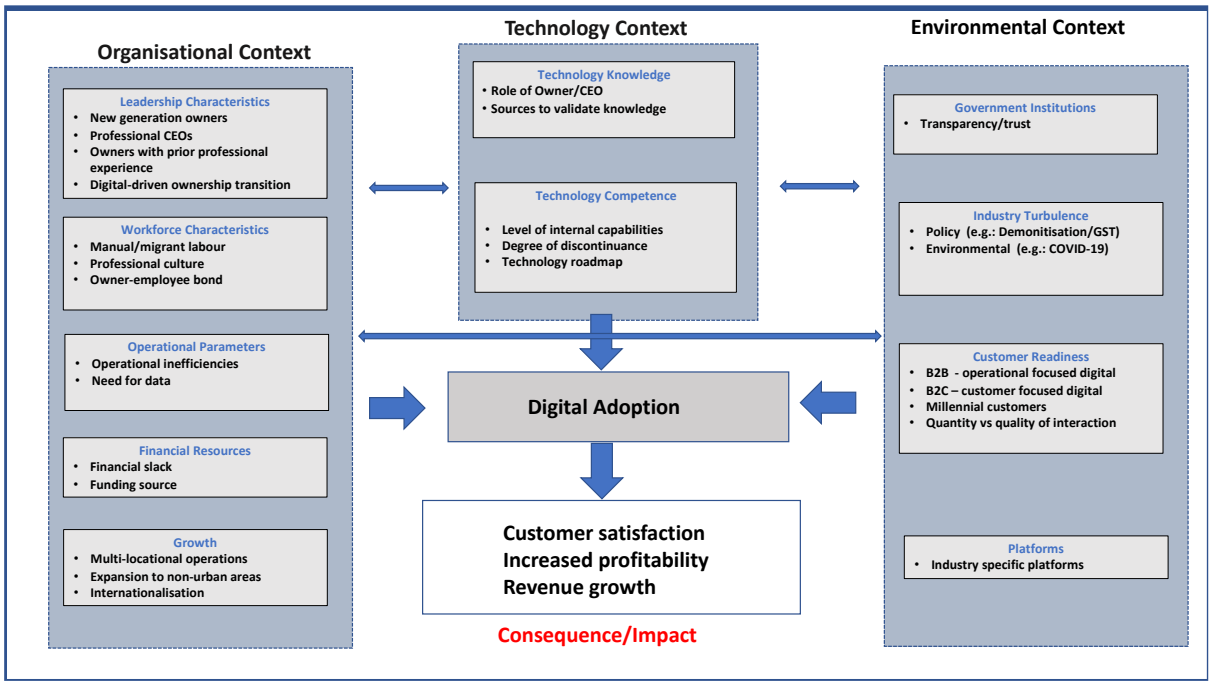

Figure 2: A framework for Digital Transformation Adoption

Defining digital transformation: comparison of literature and field

As stated earlier in this document, digital transformation is all not about implementing technology or solving discrete business issues (Rüßmann et al. 2015). Digital transformation encompasses strategy changes (Drnevich and Croson 2013), business model changes (Downes and Nunes 2013), process changes (Hess et al. 2016), and organisational changes (Bharadwaj, El Sawy, et al. 2013). (See Figure 3 below)

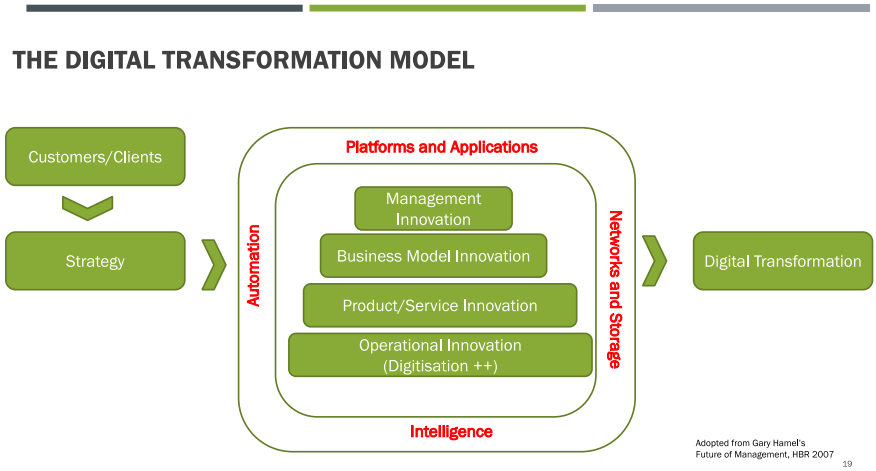

Figure 3: Digital transformation Model

Very few SMEs were found to be able to define digital transformation. SMEs mostly associated digital transformation with operational innovation using technology and digitisation. However, when probed, some did mention that digital transformation and digitisation are different. SME owners stated that digitisation is focused on internal proceses like accounting and billing while the digitalisation is more focused on business growth using digital technologies. Terms such as business models or transformation were not found to be used by SMEs. The few SMEs who could define digital were professionals who had moved from corporate firms to SMEs. For example, as per the CIO of an insurance Third Party Administrator, who previously had worked in a large technology services company:

"Yes, there is a difference between digitisation and digitalisation. Digitisation is how to convert your paper based process to digital form, Digitalisation is how do you take your services to the customers in a digital form".

While academic literature differentiates between digital transformation and digitisation, SME owners saw this as a continuum. When promoted about the potential difference, they stated they need to digitise before digitalisation and currently many of them were in the process of digitising. Literature has also shown that digitisation of core processes is an antecedent to digital transformation (Unruh and Kiron, David 2017) and therefore equally critical. Benefits from digitisation can fund digital transformation. However, in some cases, failure of digitisation has led to scepticism of further transformation.

Many SMEs could not define digitalisation and stated that their companies were not ready for digitalisation. However, they later described specific activities, they had undertaken, that was clearly digitalisation. This confirms the finding of an IDC report (Thriving in the Digital Economy, IDC 2016) that showed that SMEs underestimate their digital maturity, due to a lack of understanding of the definition and scope of digitalisation.

Large companies and consultants were very familiar with the differentiation. Large consulting companies had evolved from supporting clients on digitisation to currently supporting digital transformation. As per the as a senior partner of a large digital consulting company :

"Digital transformation is I would say, linking, almost to a business model side of it. It is across the value chain. And it is all about, how do I provide more value to my customer? And how do I increase my market share?"

Digital Adoption

Digital adoption is a continuum and the line between digitisation and digital transformation is very fine. Based on the interviews, the researcher arrived at the following classification of the stages of an SMEs digital journey (Table 4).

Stage	Definition
Digital Unaware	Unaware of digital transformation or digitalisation. Basic awareness of digitisation and automation
Digital Aware	Aware of digitalisation. Can name a few digital technologies
Digital Starter	Implemented at least one digital technology
Digital Proficient	Has a digital road map; In the process of implementing multiple digital technologies; focussing on business model changes
Digital Expert	Fully digital (typically only born-digitals or digital native companies

Table 4: Digital Adoption Stages

For the propositions developed from this study, the researcher has used "Digital Starter" to define digital adoption.

Technology Context (T-O-E)

The study found that the drivers for technology context can be broadly classified into two groups – Technology Knowledge (how SMEs become aware of digital) and Technology

Competence (The processes that allow this knowledge to be translated into adoption)(Rogers 2010).

The key differences that emerged between extant literature and interviews on the Technology Context are highlighted in the table below. **(Table 5)**

Factor	**Key digital literature**	**Characteristics of Large companies (Based on literature)**	**Characteristics of SME in emerging markets (from interviews)**
Technology Knowledge Awareness of technology options(Rogers 2010)	(Sambamurthy, Bharadwaj, and Grover 2003) (Singh and Hess 2017)	Foresight to anticipate industry and technology changes Digital Teams including Chief Digital Officer Presentations by large digital consultants	Primarily self-driven by Owner/CEO Exhibitions and conferences Supplier presentations Lack of reliable sources to validate information
Technology Competence Tacit and explicit competencies in implementing technologies	(Sambamurthy, Bharadwaj, and Grover 2003) (Bharadwaj, El Sawy, et al. 2013) (Hess et al. 2016)	Internal capabilities with large and experienced teams Focus on Scope-Scale-Speed and Source of value creation	Limited or no internal capabilities Lack of long-term vision Focus on implementing point solutions

			High degree of discontinuance

Table 5: Comparison of Technology Context factors

Technology Knowledge

Technology knowledge is the awareness of technology by firms or individuals. It can be classified into awareness-knowledge, how-to-knowledge and principles-knowledge (Rogers 2010). According to Rogers, Awareness knowledge is about a firms awareness of an innovation, how-to-knowledge focuses on the implementation and the principles-knowledge is about why an innovation is important.

SMEs were found to gather information on technology and digital from multiple sources. Some of these methods were proactive like self-research while others are reactive where vendors provided details about the latest in technology and equipment to them.

Exhibitions and Conferences: SMEs are resource constrained and have to balance the limited resources across multiple uses. As result they use alternate marketing approaches like networking (Gilmore, Carson, and Grant 2001). Exhibitions and conferences are a good and effective arenas for such networking. Most of the SME owners interviewed attended industry conferences and exhibitions both in India and internationally. The primary aim of attending these events was to market their products and meet potential sales partners. However as these were industry conferences, SME owners also use the time to meet technology and equipment vendors. Many of their competitors also exhibited at these conferences making it a good source for benchmarking. This type of knowledge was found to by awareness-knowledge.

Industry Bodies: SMEs actively use their local industry bodies to network and address industry issues like tax and subsidies. These associations also organise seminars and webinars on digital, technology, equipment etc. Information received through industry bodies was considered reliable and had the advantage of being scrutinised by a number of companies. In small manufacturing, industry bodies have also helped in negotiating financial discounts for all their members. Industry bodies focussed on both awareness-knowledge and principles-knowledge.

Collaborators (Investors/Customers/JV Partners): Though to a lesser extent, investors, JV partners and customers were also found to be sources for digital transformation. However this was very company-specific. Collaborators also focussed on both awareness-knowledge and principles-knowledge.

Self-Research: Some owners, especially the next-generation owners, proactively search for information about digital and technologies. This was through web searches, referrals or tracking competitors.

"So that still requires your own efforts, learning and interest. Basically you have to do, otherwise you can't survive" – **Next-generation SME director of 40 year old educational institution**

The challenge SME owners face is that they do not have the skill or abilities to validate the knowledge received through these channels. This results in confusion and taking the incorrect decisions.

Technology Competence

Technology competence is the IT-related knowledge, processes and procedures that a business manager or firm possesses that enables them to implement IT solutions. (Bassellier, Reich, and Benbasat 2001).

Most SMEs do not have internal technology capabilities. The study found that the technology function was either led by the Owners/CEO or a multi-tasking individual who was responsible for HR, Technology, Administration and Purchase. SMEs were therefore depending on external entities for all their technology capabilities. As a result of inadequate technology knowledge and capabilities, SMEs were found to have had a number of misguided attempts at digitisation and digitalisation. While SME owners blamed vendors for the missteps, it was apparent that lack of understanding on their own part had led to setting of wrong expectations. However these missteps became a hinderance for further digital adoption. Literature describes two kinds of discontinuance (Rogers 2010). Disenchantment discontinuance is where the innovation adoption does not meet the needs of the firm and impacts the rate of further adoption. Replacement discontinuance is where the firm replaces the innovation with another. In our study we found instances of both.

Vendors: Equipment and technology vendors play an important role in creating digital awareness among SMEs and helping in adoption. In addition to meeting vendors at exhibitions, vendors also actively meet SMEs one-on-one or at local industry body meetings. Vendors organise product demonstrations and provide Return of Investment calculations to SMEs. Previous research has shown the relationship between supplier marketing efforts and the SMEs adoption of technology (Alshamaila, Papagiannidis, and Li 2013). However, SMEs find multiple challenges in dealing with vendors. There are many options and each vendor focusses on the strengths of their products, rather than providing an overall roadmap.

Vendors provide all three types of knowledge but their principles-knowledge is focussed primarily on their own products.

Consultants: Most SMEs lack strategy and technology expertise internally and rely on external consultants. Given the cultural context in India of respecting older and more experienced resources, most of these consultants were "friends of the family" and retired personnel from large companies in the industry.

"We like to take advice from the most senior people how to go about it (strategy)" – ***SME Owner of successful auto component manufacturing company***

The consultants were perceived to be more neutral in their recommendations when compared to vendors. However, during the interviews it was found that many of these consultants were more focussed on traditional strategy, organisational development and mentoring and not qualified to provide digital or technology consulting. Given the trust the consultants enjoy among SME owners, they form an important channel for digital awareness creation programs. The consultants also assist in project and program management. Consultants were found to be the only partners who provide unbiased principles-knowledge. However, while these consultants form a good source of digital knowledge, they need the support of digital technology vendors and implementation partners.

"There are many people like me, it is not unique. But what we lack is the platform on which we can go and SME's also come, and they know that I can get this help from this place." – ***SME Consultant who had four decades of prior experience in the pharma industry before becoming a consulting to SME pharma companies***

As an extension to the field interviews, the researcher interviewed some large digital consulting organisations. These organisations have the expertise to provide all three forms of knowledge, but do not find it economical to work with SMEs. One of the recommendations that emerged was that the government helps in creating an SME aggregator platform.

"Can you provide a forum to companies like us to be able to address 100 SMEs at one go rather than going to one SME one to one"

Organisational Context (T-**O**-E)

Organisational context includes leadership, people, operational parameters and financial strength.

They key differences that emerged from extant literature and interviews on Organisational Context are highlighted in the table below. **(Table 6)**

Factor	**Key digital literature**	**Characteristics of Large companies (Based on literature)**	**Characteristics of SME in emerging markets (from interviews)**
Top Management/ Leadership Support Digital is driven top down and therefore having the right top	(Fitzgerald et al. 2013) (Bennis 2013)	Very critical for successful digital adoption. Needs new mindset Leaders need to demonstrate adaptive capacity and transparency for	Family ownership resulting in centralised decision making Old generation leaders unwilling to take digital decisions due to lack of knowledge and skills

management is critical		successful digital transformations	Higher digital adoption with next-generation leaders, professional managers and among SMEs founded by professional managers
Workforce Characteristics Digital adoption requires employee mindset and reskilling	(Hess et al. 2016)	Need for right skills and mindset Digital is multi-functional by nature and not just isolated to the technology team Implementation of change management programs	**Senior Employees** Close relationship with founders Unwilling to change or adopt digital Relationship driven and not KRA driven. Therefore, no accountability for digital adoption Inability to attract new talent due to lack of HR policies, systems and processes Change management extremely complex and needed a generational change

			Manual labour Largely unskilled and migrant. Need to automate to reduce dependence of labour
Operational parameters - process efficiencies, quality, monitoring and productivity	(Hess et al. 2016) (Salkin et al. 2018)	Key driver for most digital decisions Driving operational efficiencies goes in parallel to growth and business model transformation	Most important driver for SME digital adoption. Many SMEs still in digitisation and automation phase Limited focus on growth and business model transformation
Need for data and analytics	(Berman 2012b)	Data from digital drives further operational efficiencies	SMEs lack basic information for routine decision making Digitisation and digitalisation provide data to support operational efficiencies and growth
Financial strength	(Hess et al. 2016)	Balance the need to finance core business and digital	Operate under severe financial constraints

			Debt driven – prioritise interest payments
Multi-locational growth		Not covered in literature	SMEs leverage digital to expand locations to multi-unit operations and to rural areas (an important market for them)
Internationalisation	(Lund and Manyika 2016) (Junge 2020)	Companies using digital to accelerate customer base and supplier base	SMEs more focussed on the domestic market. Limited focus on globalisation
Funding through investors M&A/IPO	(Cavallo et al. 2019)	Digital is a pre-requirement for fund raising. Investors also play a role in implementing digital	No impact. Most SMEs in traditional sectors are still debt funded

Table 6: Comparison of Organisational Context factors

Top Management/Leadership Support is the key driver for digital transformation (Bennis 2013). This is common for both large companies as well as SMEs. However, given the concentration of authority in SMEs among a few (mainly owner/promoter and family), the role of the leadership becomes even more critical in decision making of significant changes such as technology and digital transformation.

P1: The higher the Owner/CEOs support, the greater the digital adoption

The type of leadership also emerged as key antecedent for digital for SMEs. The study showed that SMEs with next-generation leadership, those who have brought in professional management, or those who have been founded by professional management, are more likely to adopt digital transformation. Our study found that many of the older SMEs were controlled by its founders, who were good business people, but not in sync with the current digital world. It is only when their children entered the business, did their digital journeys begin.

P2: The higher the influence of next-generation leadership, the greater the digital adoption

Interestingly, as customer pressures to adopt digital increased, these leaders were rapidly inducting their next-generation to take over the business. The first mandate for these next generation leaders was found to be digital related projects.

P3: The relationship between leadership transitions and technology knowledge increases as customer readiness increases

Many of these children are millennials and educated in premium business schools in India or abroad.

The second set of more digitally mature SMEs were where professional management was brought in to manage the business.

P4: The higher the role of professional managers, the greater the digital adoption

This scenario was found to emerge when younger family members were not interested in running the business or when the founders were no longer in a position to run the business due to old age or illness. This was found to be more prevalent among SMEs who had multiple non-family partners.

The third set of digitally mature SMEs were those founded by professional managers who turned entrepreneurs, after a career in the corporate world.

P5: The higher the degree of prior professional experience among Owners/CEOs, the greater the digital adoption

These manager-turned-owners used their prior knowledge, experience, and networks from their corporate careers to implement digital in their SME organisations.

Another leadership related aspect covered in recent digital literature is the role of Chief Digital Officer vs the traditional CTO/CIO. In SMEs, this role is still largely held by the promoter Owner/CEO.

Workforce refers to the set of employees beyond the top management. Digital impacts workforce in two ways (Müller, Buliga, and Voigt 2018)**.** First digital-driven automation reduces the manual workers. Second it encourages new employee management practices like hiring and training.

In SMEs, in addition to the owner, many of the employees were "old-timers", not technically savvy and resistant to change. Even if next-generation owners were attempting to change the

company, there was resistance from these employees. Given the cultural context of emerging markets and SMEs, owners were not keen to replace these employees as they had personal bonds with the employees that in many cases, spanned across generations.

In our interviews, it was found that next-generation owners had to wait for these employees to retire before implementing any change.

That is also a reason, these people have been with the owner for a long time and it is more of a family kind of baggage with these guys. – **Professional manager of SME**

P6: The lower the owner-employee bonding, the greater the digital adoption

SMEs are also unable to attract new talent. Lack of a professional culture, organisational practices and resistance from existing employees were some of the reasons.

Issues with labour availability and migrant labour has caused many SMEs to commence their journey to automation. This has got accelerated by the Covid crisis.

Operational Parameters including process efficiencies, productivity, process monitoring and quality emerged as the primary driver for digital transformation among SMEs from our study.

P7: The higher the operational inefficiencies, the greater the digital adoption

Literature on large companies links digital transformation with growth and customer impact. For SMEs, digital is primarily an operational tool. SMEs do not differentiate very rigidly between digitisation and digitalisation and the former is linked to automation and efficiencies. The researcher's hypothesis is that the lack of differentiation between the two has led to the direct link between digitalisation and operational parameters. Also, as many traditional SMEs are B2B focussed, productivity and quality measures are more critical than direct customer need. For example, many SMEs have implemented equipment monitoring using IoT devices. IoT is clearly a digital artefact. However the implementation was driven by a need for better control and productivity rather than a direct customer impact. In this scenario, customer impact was more a consequence than an antecedent.

We are putting money behind IoT technologies that promises benefits in terms of production data and OE tracking and electricity reduction – **President of SME Packaging Company (B2B) who had worked in a large company prior to joining an SME in the same industry**

Data and Analytics are a key driver for digital adoption. Adoption of digital in turn generates new data that needs to be better analysed to optimise the use of digital (Berman 2012b).

P8: The higher the quality of analytics from digital implementations, the greater the subsequent digital adoption

Many SMEs want to take more informed decision and this has been a challenge. Their drive to digital has been driven by this need.

We have huge dependency on analytics in terms of where are our major claims coming from what kind of claims can we reduce the cost how do we increase the number of cashless. This is only possible through Digitalisation. – **CIO of SME Insurance TPA**

Availability of **Financial Resources** is key for any business or technology innovation including the digital transformation of large companies (Herold, Jayaraman, and Narayanaswamy 2006). Firms struggle with balancing the need to finance day to day operations with digital investments. Most SMEs are debt funded and repaying interest on debt is foremost priority. SMEs who are large equity funded have more slack to invest in digital.

P9: The higher the proportion of non-debt funding, the greater the digital adoption

Financial constraints were found to be major reason for slow a digital adoption in addition to owner/people mindset. Our interviews showed that there was a lack of clarity on how to determine the RoI for such investments. SME technology vendors, on the other hand, stated that given the level of inefficiencies in many SMEs, RoI was very easily achievable. The vendors stated that the lack of digital adoption was more linked to owner mindset and financial slack than RoI. While government schemes are available for such financing, SMEs were not found to be aware of these schemes.

Multi-Locational growth was found to be another antecedent for digital transformation. The growth was of two types. Many SMEs are in the retail business and were growing from a single location to multi-locational operations that included stores and warehouses. This expansion required using of digital artefacts to scale and monitor operations.

The other factor that is unique to emerging markets like India, given the geographic spread and lack of infrastructure in remote locations, is expansion to rural markets.

P10: The higher need to expand to non-urban areas, the greater the digital adoption

Digital was being used in varied sectors like healthcare, education, retail and agricultural to expand beyond non-urban areas. Due to the unavailability of data networks in some of these locations, innovative offline digital solutions have also been implemented. For example, in an interview with an SME hospital, the founder wanted to expand her expertise to rural areas using digital.

"The reason we want to go down that path is, see today the vision of the foundation is to reach out to the rural areas."

The nature of the industry/customer/product also was found to be an antecedent for rapid adoption of digital. B2C businesses were found to be faster to adopt digital in comparison to B2B companies. Many SME owners felt that their customers needed to touch and feel their product before making a buying decision, and therefore a hybrid online-offline model would be more suitable for their sales and customer relationships process. On the other hand, many SMEs admitted that going online helped them to establish direct connect with customers with a higher frequency.

Internationalisation of SMEs has been widely researched in the last decade (Kamakura, Ramón-Jerónimo, and Vecino Gravel 2012). The role of digital and platforms in accelerating internationalisation has also been also been studied (Lund and Manyika 2016). Our research was unable to validate this finding as very few of the respondents had a presence of global presence. However, there were early signs of this trends among some B2C SMEs.

While digitalisation has not been leveraged to grow to international markets, it has been used to connect with international customer and partners, more as a communication tool. In a few cases, global resources have also been leverage using digital.

Environmental context (T-O-**E**)

Environmental context includes government efforts, regulatory and policy pressures, and pressures from competition, suppliers and customers. The key differences that emerged from extant literature and interviews on the Environmental Context are highlighted in Table 7.

Factor	**Key literature**	**Characteristics of Large companies (Based on literature)**	**Characteristics of SME in emerging markets (from interviews)**
Institutional Support	(Tan, Tyler, and Manica 2007) (Luna-Reyes and Gil-Garcia 2014)	Limited support for large companies Support for SMEs in many countries	"On-paper" support available However other than financing related support, SMEs unaware of other initiatives

			Scepticism in dealing with government agencies due to mistrust driven by illegal "rent-seeking" nature of local government officials
Industry Turbulence	(Pavlou and El Sawy 2006) (Mithas, Tafti, and Mitchell 2013)	Leverage New Product Development Leverage dynamic capabilities and existing IT infrastructure	Policy shocks such as GST implementation played a key role in digitisation COVID-19 crisis and demonetisation key drivers for digitalisation
Customer Readiness	(Hess et al. 2016) (Setia, Venkatesh, an Joglekar 2013)	Need block competitors access to customers Better sense and respon to customers Literature does not differentiate between B2B and B2C	Difference between B2B and B2C SMEs Digital adoption of B2C SMEs more driven by customers For B2B SME, customers not primary driver for adoption
Availability of third-party networks	(Banerjee and Ma 2012)	Large companies aggressively adopting third-party networks to expand markets SMEs in other growth economies leveraging platforms such as Alibaba	Surprisingly low adoption Some B2C companies exploring ecommerce portals such as Amazon Better adoption of industry specific platforms such as Zomato and Practo No adoption of supply chain platforms

Table 7: Comparison of Environment Context factors

Institutional Support: A number of government bodies, including the Ministry of MSME, support the digital journeys of SMEs. Some of the schemes currently available from the MSME ministry (Source MSME Ministry website, Government of India)[5] are outlined in Table 8 below.

Scheme	Highlights
Credit Linked Capital Subsidy Scheme (CLCSS)	Technology upgradation
Cluster Development Programme (MSE-CDP)	For soft Interventions like general awareness, counselling, workshops and training programmes on technology upgradation etc; Hard Interventions like setting up of Common Facility Centers (Common Production/Processing Centre, Design Centre, Testing Centre etc.)
Tool Rooms	Tool Rooms are equipped with state-of-the-art machinery & equipment. They are engaged in designing and manufacturing of quality tools, which are necessary for producing quality products, and improve the competitiveness of MSMEs in national and international markets
The National Manufacturing Competitiveness Programme (NMCP	This programme targets at enhancing the entire value chain of the MSME sector through the following schemes:(a) Lean Manufacturing Competitiveness Scheme for MSMEs;(b) Promotion of Information & Communication Tools (ICT) in MSME

[5] The table is reproduced verbatim from the MSME ministry website. It is policy related and changing the wording would be inappropriate.

	sector;(c) Technology and Quality Up gradation Support to MSMEs;(d) Design Clinics scheme for MSMEs;(e) Enabling Manufacturing Sector to be Competitive through Quality Management Standards (QMS) and Quality Technology Tools (QTT);(f) Marketing Assistance and Technology Up gradation Scheme for MSMEs;(g) Setting up of Mini Tool Room under PPP Mode;(h) National campaign for building awareness on Intellectual Property Rights (IPR);(i) Support for Entrepreneurial and Managerial Development of SMEs through Incubators.(j) Bar Code under Market Development Assistance (MDA) scheme
TEQUP scheme	The envisages another activity, namely, Product Quality Certification
Design Clinic Scheme	To improve the design of the product to meet global challenges and compete with similar products domestically and internationally. It is launched to benefit MSMEs by creating a dynamic platform to provide expert solutions to real time Design problems and add value to existing products. The goal of this scheme is to help MSME manufacturing industries move up the value chain by switching the production mode from original equipment manufacturing to original design manufacturing and hence original brand manufacturing

Table 8: Government Initiatives (MSME Ministry website, Government of India)

The schemes are very attractive on paper and focus on moving SMEs up the value chain through technology and digital innovation. However, despite prompting, none of the SMEs were found to be aware of these schemes. On the contrary, there was considerable scepticism of dealing with government agencies, other than for loan restructuring. This scepticism was driven by the difficulties in dealing with local government officials and their "rent seeking" activities.

P11: The higher the transparency in institutional support, the greater the digital adoption

Industry Turbulence has a significant impact on digital transformation. Policy shocks like demonetisation and GST and or industry shocks such as Covid-19 crisis had accelerated digital adoption. Literature has studied turbulence as it relates to competition, customer or product shocks (Pavlou and El Sawy 2006). It has not been studied in terms of policy and other shocks.

P12: The higher the industry turbulence, the greater the digital adoption

Our study has shown that industry turbulence accelerates digital adoption both among customers as well as SMEs. A number of SME owners were rapidly enhancing their digital knowledge through online courses to handle the Covid-19 crisis.

GST led to the start of the digital journeys of many SMEs. This forced them to move from manual accounting and billing to digitisation. Demonetisation started the transition to cashless transactions through the incorporating of various Fintech solutions.

The Covid-19 crisis was the single most significant driver for digital adoption. The crisis that led to the complete shutdown of infrastructure in the country. SMEs were the most impacted as they did not have the infrastructure or resources to survive a crisis of this magnitude. Within a few weeks, most SMEs adopted digital marketing as a means of survival. The crisis has also triggered digital as a means to reach existing customers through virtual environments.

Post Covid, we have restricted from office only, but this is one of the areas we have to work on, where we leverage this zoom platform for interacting with our clients – **SME Owner of plywood distribution company**

SMEs stated that they would continue these practices beyond the crisis as it is a convenient way to expand their business while delivering better customer service. As stated by the founder of SME pharma company who struggled with years of resistance from doctors to communicate digitally with them.

"We will never go back pre-Covid days, I don't think it's ever going to happen."

Customer readiness is a combination of a customer's willingness to accept new technologies and the readiness of the supplier to support the new technology. (Zhu, Kraemer, and Xu 2003)

Our research found customer readiness as a direct antecedent was more prevalent among SMEs focusing on B2C customers. This was driven by changing buying behaviour especially among millennials.

P13: The higher the proportion of millennial customers, the greater the digital adoption

It is the researcher's belief that, in growth markets, customer as an antecedent, is at early stages and will evolve in a few years. As larger numbers of g-SMEs and their customers benefit from digital, customer readiness will shift from being a consequence to an antecedent.

SMEs pride themselves about their customer connect. Most SME owners personally know all their key customers. According to many owners, while digital enhances the quantity of communication it cannot replicate the quality of human interaction. Some products and services require the customer to see and touch the product.

It is all about human touch. If you see large Corporates then, it's all standard procedure. If you do more and more digitalization, it loses human touch. – ***Owner of small hospital in Vadodara***

We are actively investing from last four years on the digital platform so we are semi digital company. You can go my website and you can chat with my team, you can get more information online but ultimately business sampling happens at the stores, we are creating walk-ins through digital platforms up to now. – **Founder of retail SME furnishing company** *(B2C)*

In a B2B scenario, SMEs felt that physical meeting with customers helps in building trust. On the other hand, SMEs also stated that digital tools such as video conferencing gave them an ability to directly connect with a larger number of customers and more frequently. Most SME felt that a hybrid or omnichannel model may emerge as the best solution as this model balances efficiency and effectiveness of customer contact.

P14: The higher the ability of digital technology to replicate human interaction, the greater the digital adoption

The study also found that digital is more easier to implement for standardised products and fewer SKUs. Respondents as wide ranging as plywood distributors to snack food retailers stated having large SKUs is a big challenge in digitalisation.

Our findings has also led to the hypothesis that there is a difference in drivers for digital adoption between B2B and B2C companies.

P15: The higher the proportion of B2C business, the greater the marketing focussed digital adoption

P16: The higher the proportion of B2B business, the greater the operational focussed digital adoption

Extant literature has shown that availability of platforms accelerates digital adoption. In other growth markets, platforms such as Alibaba have actively worked with SMEs to onboard them onto their marketplace platforms (Li et al. 2018). Surprisingly, in the Indian context, this trend is at very early stages. Some B2C SMEs have started making their products available

on generic e-commerce platforms. On the supply chain side, our study did not find any adoption. However, an interesting finding was that that SMEs were integrating to industry specific platforms more rapidly (for example, Zomato for restaurants, Makemytrip for hotels, Practo for healthcare) than generic platforms like Amazon. This could possibly be explained by the finding that SMEs do their competitive benchmarking within their industry peers and these platforms have a high usage and network effect within their industries.

P17: The higher the availability of industry specific platforms, the greater the digital adoption

Consequences (Impact) of digital transformation

As discussed in the previous section, the primary objective of digitalisation and digitisation for SMEs was enhancing operational efficiencies. When probed, SME owners stated that calculating Return on Investment on efficiencies and cost savings was easier and more immediate, than basing a decision on customer satisfaction.

However, improvement in operational parameters had led to benefits like improved quality, turn-around-times and responsiveness . These parameters have a direct connection with customers. B2B SMEs stated that this would result in improved brand-image, sales and market share, in the long-run. For many it was also a question of survival with increased competition from global manufacturers.

In B2C companies, where digital is being used for customer facing activities like sales and relationship management, the impact on sales and growth was found to be more immediate.

"How can I give as much as possible to the customer. Seamless, and most importantly, a consistent experience. Going digital has ensured this" – **Owner of SME resort owner who is using a digital app to interact with his customers**

Digital has also helped improve communications and brand presence of SMEs. SMEs were found to be gradually adopting digital media options like Facebook, Instagram and LinkedIn and these have given them additional reach. For the SMEs who have adopted e-commerce platforms like Amazon, it has expanded the geographic reach of their products. However what emerged was that SMEs are still at an early stage of digital adoption for sales and marketing. One use-case that was surprisingly prevalent among SMEs was CRM to manage large sales teams. From plywood distributors to pharmaceutical companies, CRM with mobile-based order tracking, reporting and sales force tracking was found to be commonly used.

Digital payments have been universally adopted by SMEs. This has led to more convenience for both customers and SMEs themselves. In the pre-digital scenario, SMEs had to follow up for collections by sending people to collect cheques and cash. This was a significant effort and also prone to theft and fraud.

Digital has led to efficiencies and cost savings and therefore improved the bottom line. However the impact of top-line and revenue growth was reported to be very minimal given the early stages of implementation. SMEs felt that revenue growth would be more observable in a three to five year period.

Digital transformation of large Emerging Markets Companies

To contrast the decision making process of SMEs, some large companies were also interviewed as part of the study.

Large companies have internal digital teams and also hire external consultants like Accenture and McKinsey. These consultants expose them to the latest trends and help them develop digital roadmaps. Large companies also have resources to help gather information from attending industry conferences and by formally tracking their industry peers. There is also significant investor push for digital in these companies. These findings were in confirmation with extant literature.

Digital drivers for large companies

Unlike SMEs, the key antecedents of digital transformation for large companies was to remain competitive and growth.

Cost savings and efficiencies were not found to be a key driver. However, operational savings were used to fund their digital journeys. Large companies were also found to have a multi-vendor network for digital. This network consisted of large equipment and technology vendors as well as cutting-edge start-ups.

Digital consequences for large companies

In line with their antecedents, the consequences of digital for large companies was revenue growth and business model transformation. Digital has helped these companies stay ahead of their competitors and prevent their business from getting disrupted by born-digitals. Many of these large companies had adopted ambidextrous models where they continued their

traditional business to protect current revenue streams, while separately launching new business models. Backing this ambidextrous model was two-speed IT. This consisted of a faster paced customer-focussed digital front backed by a slower speed legacy back-end . Two-speed IT ensured that these companies could very quickly adopt to a digital business model while gradually adapting their back-end processes.

SMEs have a number of constraints in their digital adoption. This has led to the differences in digital maturity among large and small companies. However SMEs are relatively flexible and agile . The is due to their flat structure and centralised decision making process (M. Gupta and Cawthon 1996). SME owners also have very intimate knowledge of their internal capabilities as well as their clients' requirements (Levy and Powell 1998). If some of the constraints relating to technology, change management and financing are managed, SMEs have the ability to leapfrog over larger companies in their digital journeys.

Managerial and Policy Implications

The Challenges

The study provides several managerial implications for the digital transformation of Small and Medium Enterprises. The research has demonstrated that, with the right inputs, SMEs can transform digitally. It has also shown that SMEs who have begun their transformation journey are seeing benefits of increased customer satisfaction, better quality and higher sales and profitability. Digital transformation has also helped some SMEs globalise their markets. SMEs that have either brought in leadership from corporates or where next-generation, international educated, leaders have taken over family businesses are ahead on their digital journeys.

However, SMEs face several challenges in digitally transforming. The challenges start with awareness of what digital transformation is and what it entails. There is significant confusion between digitisation and digitalisation. Other than industry conferences, the primary source of information for SMEs is through consultants and vendors. The study also found that many of these consultants themselves were more proficient in digitisation and implementation of basic ERPs than creating digital roadmaps.

SMEs also received a significant portion of their information from technology and equipment vendors. These vendors are of three kinds. One set of vendors represent specific companies, and their pitches are focused on selling technology and equipment. While some of these vendors focus on digital and automation, their focus is limited to their products and services. They do not focus on a broader digital roadmap.

The second set of vendors are small system integrators and technology suppliers. The study found that, in many cases, the relationship with such suppliers has not been a happy experience. SME owners' lack of understanding of their requirements and a similar lack of understanding on the part of these vendors are the causes of this dissatisfaction. The vendors are focusing on point solutions and not on helping create digital roadmaps. The researcher came across numerous instances where projects were abandoned mid-way. This not only wasted time and resources but reinforced a mistrust of technology and digital.

The third set of consultants were senior personnel from the same industry who have donned the role of consultants for SMEs. Many of these consultants had been part of digital journeys in larger organisations and were technology agnostic. As a result, advice from this group was

found to be pragmatic and with a long-term view. However, many of these consultants, themselves, did not have a technology background and had not kept in touch with the latest technology disruptions.

Finally, while there have been business press articles on government support on digitalisation, SMEs were not aware of any such support.

All the findings point to the issue that there is no obvious stakeholder who can support SMEs create a sustainable digital roadmap. SMEs do not have the internal capabilities or resources either. Also, since the digital landscape is rapidly evolving, the stakeholder needs to be individuals or organisations who keep track of the latest developments. The digital journey is a long one and fraught with risks, and there is a need for long-term handholding. In contrast, large companies engage consultants like Accenture and IBM to help them create and drive their digital strategies.

Unless this issue of awareness and road mapping is solved, most SMEs will not begin their digital journeys or will continue to have missteps.

The next issue faced by SMEs is the implementation of digital. As mentioned above, most owners/promoters are not technology savvy and do not have the knowledge to drive digital transformation. Interviews have shown that this issue gets further confounded by the ever-changing digital landscape, the number of technology choices, and the difficultly in future-proofing any investments. The research included companies who had implemented the cheapest solution available, which were not future proof. Other SMEs had implemented best-in-class technology in one area but ran out of budgets to make further investments.

Prioritisation of digital was another issue being faced by SMEs. The interviews showed that SMEs found prioritising operational efficiencies related digital (for example, implementing IoT for proactive maintenance) was less risky than implementing digital for customer-facing activities. Only in B2C SMEs were found to be prioritising customer-facing transformation. Finally, financing digital was a big challenge for already resource-constrained SMEs. Most SMEs struggle with finances and cash flows. digital was often dismissed as a luxury, especially in more traditional SMEs.

Building the Ecosystem

In subsequent interviews, SME owners and consultants were asked on how they could be best supported in their digital journeys. These responses, combined with secondary research, has led to a conclusion that to create a sustainable digital movement among SMEs, an entire ecosystem will need to be developed.

The following section discusses the stakeholders and the role they can potentially play.

Government Bodies

The government (through the MSME ministry and thinktanks such as NITI Aayog) can help in building and launching a policy framework for digital transformation. However, given the high degree of scepticism among SMEs of dealing with government agencies, the actual implementation should be either private or in private-public partnership.

The SME Go digital platform launched in Singapore is a potential role model. This platform has specific programs targeted at each of the challenges faced by SMEs, i.e. awareness, planning and implementation. Table 8 below provides an overview of the program.

Program	**Description**
Industry digital Plan (IDP)	Guide on digital solutions and training required for each stage of business growth
Start digital Pack	Foundational digital solutions for new SMEs, to help get a head start in going digital
Grow digital	Business-to-Business (B2B) and Business-to-Consumer (B2C) e-commerce platforms can be leveraged to go global
Consultancy Services (SME digital Tech Hub)	Expert advice that can be tapped to transform business using digital technologies
Pre-Approved Solutions	Proven SME-friendly digital solutions pre-approved by IMDA to meet business needs. Government grants, e.g. Productivity Solutions Grant (PSG), are available for the adoption of these solutions.
Digital Resilience Bonus	Bonus for uplifting digital capabilities to emerge stronger after the circuit breaker period, starting with the Food Services and Retail sectors.
digital Project Management Services	Project managers with expertise to support in implementing the digital solution

Table 8: Go Digital Program for SMEs (Source: Infocom Media Development Authority Singapore)[6]

Given the geographic diversity and complexity of emerging markets like India, a more extensive network of public-private partnership is required to implement a similar solution.

[6] Reproduced verbatim from Singapore Infocom website. Not altered as it is government policy

"Why can't the government use the passport office model for digital? It follows government guidelines but is managed by a private company. See how efficient it has become? – SME Owner

Academic Institutions

The perception among SMEs is that academic institutions are more focused on large corporates or start-ups. SMEs are generally ignored by academia both from teaching and placement perspectives. SMEs owners felt that educational institutions can play multiple roles in SME development.

SME Centres of Excellence: Institutions across the country can set up CoEs that work with local SMEs in imparting knowledge, including digital expertise and consulting. SMEs feel that unlike vendors and third-party consultants, academic institutions are neutral and will provide balanced views. Educational institutions are also at the forefront of digital and can impart the latest trends. The consulting can be a combination of pro-bono and paid consulting. The digital expertise in these academic institutions can revolve around the industry clusters in their region.

"There are IITs, IIM, NITs and other public universities in every state. Each one can take up SME digital literacy programs in their regions."- SME Owner.

SME owners felt that knowledge sharing could be in the form of workshops and seminars at periodic intervals, and these can be conducted in conjunction with local business associations.

While these seminars are pro-bono, individual SMEs will have the opportunity to take up paid consulting services with the faculty. These may be small assignments but will allow SMEs to gain personalised knowledge, and the faculty will get access to data and information for research and case writing.

Some academic institutions like Indian School of Business through its Family Enterprise and Global Manufacturing CoEs are working with SMEs. IIM Sambalpur has launched an SME focused program in conjunction with a leading SME Industry body[7]. The feedback from SMEs is that these initiatives should be across institutions.

Placements: In many interviews, SME owners felt that academic institutions, especially business schools, were not doing enough to promote SMEs as potential employers. They also admit that they first need to build the right culture and policies to attract talent. Our research has shown that new and educated workforce is key to digital implementations. If this gap between institutions and SMEs can be bridged, it will not only increase the placement options for the institutions but also provide SMEs with the workforce of the future. SMEs also stated that they are open to providing shorter-term assignments like internships and projects to students where they develop and implement digital strategies. They felt that these assignments would be more hands-on compared to similar assignments in large corporates.

Certification and Training of digital Consultants: The study has brought out the inconsistency of knowledge and capabilities of digital consultants. In a few interviews, it emerged that academic institutions can play a role in training and certifying consultants.

[7] https://iimsambalpur.ac.in/en/mou

"Microsoft has certified its partners as Gold and Silver. Can digital consultants also be certified, so we know that they are of a certain quality?" – SME Owner

Academic intuitions, under the aegis of Government bodies like National Skill Development Corporation (NSDC) and the Ministry of MSME, can help develop guidelines for such a certification program. These programs can be rolled-out through academic institutions.

Industry Associations

Industry associations play an important role in knowledge dissemination. Most SMEs are members of local chapters of national associations like CII and FICCI. They are also members of industry-specific associations. Some SMEs are members of SME forums like the India SME Forum. During the interviews, it emerged that SMEs use these associations to network, exchange information and attend seminars. Some of these associations and forums offer panels of experts. However, these services were rarely used. Also, many of these experts were focused on HR and organisation development and not digital specifically. Some SME owners mentioned that these associations could take a step further and negotiate group pricing with consulting companies and technology providers that will help all the members. The one challenge mentioned about Industry Associations is that large companies dominate the agenda, and SMEs do not have a voice. This was more true for industry-specific associations.

SME Digital Consultants

The study has shown that SME Consultants are the primary source of information for most SMEs. If the issue of competency and consistency can be managed through the certification program, consultants will become the critical player in SME Digitalisation. These consultants can play a role in imparting knowledge and developing digital roadmaps. The consultants can be a combination of industry specialists or digital specialists and will be able to play a sustained role in the digital transformation of SMEs

Large Digital Consultants

As part of our study, a few large digital consultants were interviewed. These companies had the expertise and experience in large scale transformations but did not find the economics of dealing with SMEs viable. Some of the ideas that emerged with these companies on ways they could extend their expertise to SMEs included:

- Incorporate SME training as part of CSR activities
- Work with SME consolidators which give them scale (For example, working with an SME body or Ministry of MSME as a client to help set up SME processes)

Vendors/Suppliers

Technology and equipment vendors play an essential role in digital and automation initiatives of SMEs. Many of these vendors themselves are small and do not have the expertise or the financial incentive to play the role of a digital consultant. However, these smaller vendors can play a significant role in the platform ecosystem that is being proposed at the end of this

section. Some larger vendors like SAP[8], Tally and Microsoft have launched cloud-based solutions targeted at SMEs. While SMEs with new generation leaders are open to dealing with the large vendors, our study has shown that traditional SME owners are apprehensive and would rather deal with smaller and local vendors. The other challenge with smaller vendors is that they do not provide comprehensive digital solutions and focus on specific solutions like ERP. Also, other than a few software product companies, most suppliers have products that are more suited to larger SMEs and large clients. Supplier innovation to provide products for small enterprises is critical for digital adoption. While a number of start-ups are entering this space, they do not have the credibility or references that is critical for risk-averse SMEs.

"I contracted with a big company for my ERP but had to go to another vendor for IoT to integrate with my CNC machines" – **SME Owner**.

Large companies

One suggestion that emerged from multiple interviews was that larger companies in an industry could mentor SMEs. Owners stated that they should be treated as long-term partners instead of as competitors.

"If large pharma companies help me develop my systems, I can provide material at the same quality and price as what they currently import from China." – **SME Pharma Company**

[8] https://economictimes.indiatimes.com/small-biz/sme-sector/sap-launches-initiative-to-make-smes-globally-competitive/articleshow/76685309.cms

The one example used in a few interviews was how large auto manufacturer like Maruti helped develop an entire ecosystem of SME suppliers. It was felt that this model could be replicated across industries. However, larger companies stated that it was not their charter to help smaller companies unless these SMEs were their vendors.

"My customer, who is a large chemical company, helped me implemented GST at is was essential for them. But they do not support me on anything else." –**SME Chemicals Company**

Platforms and Networks

Literature review has shown that platforms like Alibaba and Amazon have played a significant role in developing digital skills of SMEs in some growth markets. Surprisingly there appears to be a minimal contribution of such platforms in the Indian context, other than industry specific platforms. While some B2C SMEs are using eCommerce platforms to distribute their products within the country and international markets, there have not received any developmental support from these platforms. Alibaba, which is a B2B platform, was not perceived to be a right partner other than for procuring inputs from Chinese vendors. None of the B2B SMEs we interviewed used Alibaba to sell their products.

Financial Institutions

Financing is a critical part of digital transformation. Financing can be provided through commercial banks, Regional Rural Banks and Urban Cooperative Banks and institutions such

as SIDBI and State Finance Corporations. Vendor financing and small loans through e-lending portals such as www.lendingkart.com, are other options that are available for SMEs.

SME "ONEDigital" Platform

Supporting the digital journey of SMEs requires an entire ecosystem of providers backed by the support of government bodies, academia and industry associations. Figure 4 below provides a potential model of integrating the various provider under one platform.

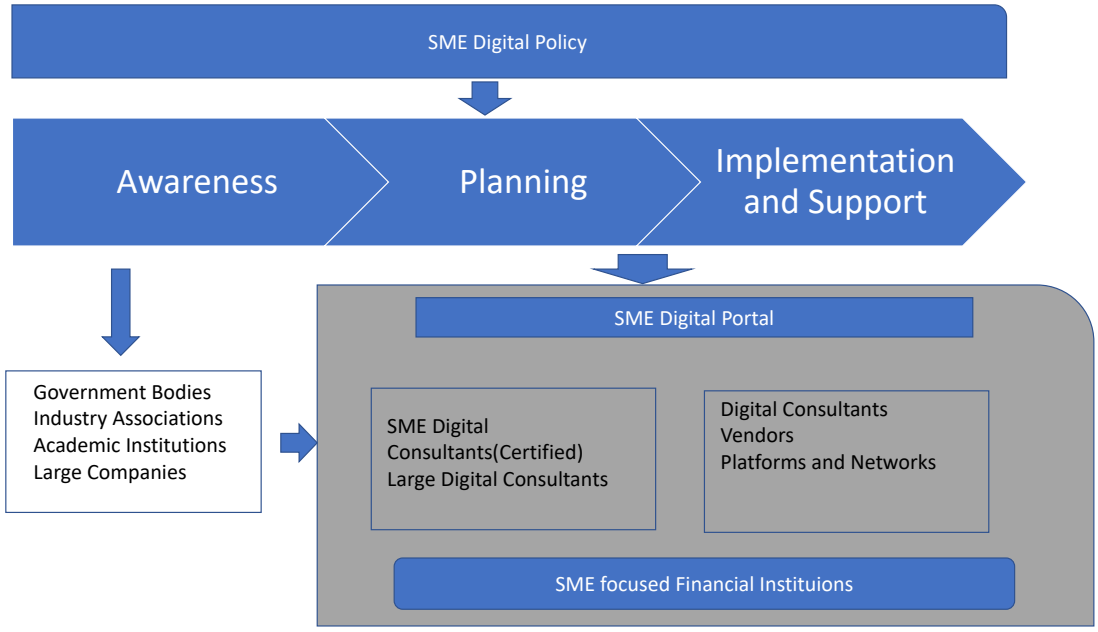

Figure 4: "ONEDigital Platform"

As discussed in this section, a range of bodies can play a role in enhancing the awareness and benefit of digital transformation. A certification program for digital consultants will help in standardising the quality of information. The next step is to provide SMEs with a reliable "one-stop-shop" for planning and implementing digital. Our study has shown that no such

platform exists today. The MSME ministry in India announced a digital platform for SMEs but later admitted that this was delayed.

Given the complexity of digital, it is recommended that these platforms are owned and run by private enterprise backed by policy framework from the government. Existing players such as telecom companies and SME industry forums already have large bases of SMEs. These players can quickly convert themselves to two-sided platforms by onboarding digital consultants, technology vendors and financial institutions. Government grants can also be channelled through these portals.

Over a period, if two or three such platforms emerge, it will provide all players in the ecosystem access to SMEs and vice versa. Many large consultants and technology and equipment vendors do not target SMEs due to the lack of scale. Such consolidator platforms may incentivise them to develop and market solutions for SMEs.

Given the scale and diversity of growth markets like India, the researcher believes that such third-party platforms with policy guidance from the government will be more effective than the “Singapore Model” where a single platform is owned and operated by the government. Market forces will determine the success of these platforms, and they may specialise in specific industry segments, over time.

"We need an UrbanClap for digital Services. I use them all my office maintenance services and don’t have to go anywhere else. If the quality is bad, they take care of it. Today if I have a problem with my technology vendor, I have nowhere to go” - SME Owner.

Changes within SMEs

The previous sections outlined the challenges faced by SMEs in their digital journeys and a potential ecosystem model that can support their transformation. However, for SMEs to transform there needs to be change within as well. The study brought out that digital is driven by owners and CEOs. Many SME owners are not technology savvy and are either unaware or resistant to change. Short-term survival related issues consume their time and energy. Some of the recommendations to help SMEs prepare for change include:

- Induct the next-generation of family members who are more open to change and comfortable with technology
- Set-up proper HR systems to attract fresh talent both at senior and entry levels
- Hire professional leadership from larger companies within the industry
- Create medium and long term plan sand benchmark the company performance against traditional and new players
- Allow newer managers to demonstrate the impact of digital through proof of concepts
- Build a culture of continuous improvement as this has a linkage to innovation (McAdam, Stevenson, and Armstrong 2000)

Limitations of Study

As this is among the first studies in this area, there are several limitations.

- The research was conducted in India. However, India has moved on from being an emerging economy to a growth economy. There is a need to conduct this study in both growth economies and emerging economies such as Vietnam, Cambodia, and Kenya
- No financial data was incorporated to measure the firm performance, due to limitations of time and data

Potential for future research

The study is an exploratory in an essential but in a newer area. Its output can form the basis for several studies for further research in this area. Since the topic is of significance for policy development in emerging/growth economies, there is a need to quantify the importance of the propositions that emerged from this exploratory study.

There is also a need to test the propositions that emerged from this study empirically. These empirical studies can incorporate financial data as a proxy for firm performance to establish the effectiveness of digital transformation.

A study based on field experiments that tracks the decision-making process for digital will be useful in further understanding this phenomenon.

The study can be conducted in other growth and emerging economies to get a fuller understanding of the drivers for digital transformation. The drivers across regions and countries can also be contrasted with future studies.

Additional research can be conducted to find the differences in the path to digital transformation across industry segments and company size.

Summary

Purpose: The purpose of this research is to examine the antecedents and consequences of digital transformation strategy among SMEs in India, to drive competitive advantage and market growth.

Originality/Uniqueness: The research provides multiple-contributions. First, the literature review consolidates all major antecedents and consequences of digital transformation from various disciplines such as IS, Marketing, Strategy and Operations into one framework. From an overall decision making perspective, this is critical. Second the research extends the framework to SMEs in emerging markets and highlights the similarities and differences. While research has been conducted on general technology implementation in g-SMEs, very little research has been conducted on their digital transformation journey in emerging/growth economies and its consequences on business performance. Third, the study brings out the lack of understanding of digital among g-SMEs and provides a comprehensive policy framework for digital implementation.

Managerial implications: The findings of the research are significant at two levels. At a firm level, they will provide growth/emerging economy SMEs with a framework to look at their digital strategy. This will help them become more competitive within their countries and internationally. At a national level, the findings of the study can help build policy and tools to enable digital transformation across a vast number of SMEs. Given the focus of governments on SMEs, this will be of critical value. The managerial implications have also been covered in greater detail in the previous section.

Generalisability: The findings are based on a study of Indian SMEs. However, the findings can be extended to SMEs in most emerging/growth economies.

Research Implications: This study will be conducted among a small sample of Indian SMEs. However, the study can be tested among a larger sample and expanded to other geographies and segments of SMEs.

Appendix 1: Sample Business Articles

To support the researcher's argument that there is a significant focus on SMEs and their digital strategies.

Date	Link	Summary
Jul 2019	https://economictimes.indiatimes.com/small-biz/smesector/alibaba-like-msme-marketplace-soon-nitingadkari/articleshow/71055327.cms	The Minister of MSME stated that they considering an Alibaba like marketplace solely for MSMEs
Aug 2019	http://www.moneycontrol.com/ms/world-sme-day-2019/news/business/nitin-gadkari-promises-concrete-decisionfor-timely-payments-to-msme-4344911.html	Payments and credit financing related platform for MSMEs to be launched
Sep 2019	https://economictimes.indiatimes.com/small-biz/smesector/how-whatsapp-business-has-become-a-popular-toolfor-micro-enterprises/articleshow/71130211.cms	WhatsApp becoming a popular marketing tool for SMEs
Sep 2019	https://economictimes.indiatimes.com/small-biz/smesector/google-parent-alphabet-backed-ayefinance-targetslending-to-5-lakh-micro-smes/articleshow/71075088.cms	Google-backed online fintech lender for MSME
Jan 2019	https://www.thehindubusinessline.com/info-tech/zoho-offersits-software-to-local-sme/article28128003.ece	CRM provider ZOHO partners with a state government to provide CRM products to SMEs
Sep 2019	https://asianage.com/business/companies/160919/enablingsmes-to-drive-the-indian-economy-to-a-brighter-future.html	Conference to enable digital
Sep 2019	https://www.malaymail.com/news/malaysia/2019/09/07/chinaand-malaysia-take-first-step-towards-possible-halal-techsector-tie-u/1788255	China and Malaysia to partner to share digital SME best practices
Jun 2019	https://www.entrepreneur.com/article/335638	The article warns that African SMEs will fail if they do not go digital

Appendix 2: Qualitative Questionnaire

Warm-up

- Tell me about your company, what you do and how you do it.
- Please walk me through the entire value chain from sourcing to customer

Grand Opening

- There has been much talk on the digital transformation of companies. What does this term mean to you?
- Can you talk about this in the context of your company and the industry you operate in?
- What are the digital transformation activities that you have undertaken?
- I have read that digital transformation is less about digitisation and more about strategy and business model driven changes led by technology. What is your view on this?
- In your view, are the two different?

Reasons for digital

- What are the key drivers that motivated you to go down this path?
- Any other triggers?
- If you had not/or do not go down the digital path, what are the risks your company could face?
- In my last interview the responded said ….what is your reaction ?
-

Capabilities Required?

- What skills and capabilities are critical to implementing digital transformation?
- What are the key barriers to digital?

- What does it take to be successful in digital transformation?
- Please let me know the key decision-makers for technology in your organisation.

Sources of Awareness

- How do you get to know about these technologies/transformations?
- What role does government initiatives and industry bodies play?
- Where else do you get information from?

Digital Maturity

- Which aspects of digital will you prioritise and why?

Benefits

- Can you explain the benefits that you have gained from digital transformation – You have mentioned some reasons earlier, have you been able to achieve this?
- Why do you think these have been achieved?
- What is the risk of digital transformation, based on your experience?
- How has digital transformation impacted your revenue growth/market share/competitiveness.
- Are there any benefits that were unexpected or surprised you?
- Are there other initiatives that could get you to the same goal?

Appendix 3: Code Book

	Name	Description
AE	**Antecedents - External**	**REASONS EXTERNAL TO COMPANY FOR GOING DIGITAL**
AE01	Antecedents - External\Availability of external platforms	Platform like amazon and alibaba are allowing SMEs to go digital
AE02	Antecedents - External\Availability of New Technology	Availability of new technology and equipment
AE03	Antecedents - External\B2B Customer Driven	Driven by business customer
AE04	Antecedents - External\B2C Customer Driven	Driven by end customer
AE041	Antecedents - External\B2C Customer Driven\Convenience	Driven by end customer convenience
AE042	Antecedents - External\B2C Customer Driven\Millennials	Driven by end customers who are millennials
AE05	Antecedents - External\Brand Building	To drive Image or interest levels
AE06	Antecedents - External\Competition	Driven by competition
AE07	Antecedents - External\Compliance, Regulation, Policy and Law	Driven by compliance requirements including GST, quality certifications etc.
AE08	Antecedents - External\Covid	Covid related issues
AE09	Antecedents - External\International Customers	Required to reach International customers
AE10	Antecedents - External\Investors	Driven by investors, shareholders, private equity
AE11	Antecedents - External\Social Cause	Driven by social cause or need
AE12	Antecedents - External\Vendor Driven	Driven by vendor
AI	**Antecedents - Internal**	**REASONS INTERNAL TO COMPANY FOR GOING DIGITAL**
AI01	Antecedents - Internal\Employee Driven	Driven by employee need/need to attract tech savvy employees
AI02	Antecedents - Internal\Financial Decision	Driven by financial factors
AI03	Antecedents - Internal\Fraud Prevention	Prevention of fraud, misuse, theft
AI04	Antecedents - Internal\Growth	Need to grow business, add employees etc
AI05	Antecedents - Internal\Lower Cost	Need to lower cost (cost is specifically mentioned)
AI06	Antecedents - Internal\Maturity	Lifecycle of company
AI07	Antecedents - Internal\Multi-location Operations	Increase location of stores, factories or godowns
AI08	Antecedents - Internal\Need for Analytics	Need for data, information and analytics
AI09	Antecedents - Internal\Need to Monitor	Need to monitor process
AI10	Antecedents - Internal\Next Generation Leaders	New generation of owners and leadership
AI11	Antecedents - Internal\People Issues	Employee or labour related issues
AI12	Antecedents - Internal\Productivity, Efficiency and Waste Reduction	Productivity, efficiency and waste reduction
AI13	Antecedents - Internal\Professional Management	Hired professional management
AI14	Antecedents - Internal\Quality	Improve quality
AI15	Antecedents - Internal\Top Leadership	Change is driven by top leadership
AI16	Antecedents - Internal\Transparency	Need for transparency and eliminate biases and ambiguity
Aw	**Awareness**	**SOURCE OF INFORMATION OF DIGITAL**
Aw01	Awareness\Competitors	From industry and competition
Aw02	Awareness\Consultant	From consultants etc
Aw03	Awareness\Customer Service and Sales Team	From customer service and sales teams
Aw04	Awareness\Customers	From customers
Aw05	Awareness\Exhibitions	From exhibitions, industrial fairs and conferences etc
Aw06	Awareness\Government Bodies	From government bodies and ministries
Aw07	Awareness\Industry bodies	From industry bodies and associations
Aw08	Awareness\JV and other Partnerships	From JV and other partnerships
Aw09	Awareness\Other Industries	From non competitive industries
Aw10	Awareness\Self Search	From online search, self-reading etc
Aw11	Awareness\Vendors	From vendors and suppliers
BD	**Business Description**	**TYPE OF BUSINESS**
BD01	Business Description\Agribusiness	Agricultural business
BD02	Business Description\B2B	Business to Business
BD03	Business Description\B2B2C	Business to Business to Consumer
BD04	Business Description\B2C	Business to Consumer
BD05	Business Description\Distributors	Distributors, wholesalers, retailers
BD06	Business Description\Education	Schools, Colleges, Training
BD07	Business Description\Healthcare	Hospitals
BD08	Business Description\NGO	NGOs
Cap	**Capabilities**	**HOW TO BUILD DIGITAL CAPABILITIES**
Cap01	Capabilities\Design Thinking and Agile	DT specific tools and methods
Cap02	Capabilities\External Vendors	Building capabilities from external vendors
Cap03	Capabilities\Internal Capabilities	Building or hiring internal capabilities
Cap04	Capabilities\Tie-up with Start-ups	Tie up with start ups to get capabilities
ConE	**Consequences - External**	**IMPACT OF DT ON FACTORS EXTERNAL TO THE COMPANY**
ConE01	Consequences - External\Brand Image	Improved brand visibility
ConE02	Consequences - External\Cashless Transactions	No longer need to accept cash
ConE03	Consequences - External\Convenience	Increased convenience
ConE04	Consequences - External\Customer Satisfaction	Increased customer satisfaction scores
ConE05	Consequences - External\Global Reach	Ability to grow internationally
ConE06	Consequences - External\Increased Customer Touch	Direct connect with customer and increased communication
ConE07	Consequences - External\Social Upliftment	Helps social causes
ConE08	Consequences - External\Vendor Benefit	Helps vendors
ConI	**Consequences - Internal**	**INTERNAL IMPACT OF DT**
ConI01	Consequences - Internal\Better Quality and Consistency	Increased quality of output and consistency
ConI02	Consequences - Internal\Business Obsolescence	Business will shut down due to digital
ConI03	Consequences - Internal\Data and Analytics	Information availability to take better decisions
ConI04	Consequences - Internal\Employee Morale	Improvement in staff morale
ConI05	Consequences - Internal\Global Teams	Ability to have global teams
ConI06	Consequences - Internal\Increased Profitability	Increased profitability
ConI07	Consequences - Internal\Operational Efficiencies	Increased operational efficiencies
ConI08	Consequences - Internal\Revenue or business Growth	Increased revenues or business growth
ConI09	Consequences - Internal\Workforce Reduction	Reduction in manpower
Cst	**Constraints**	**FACTORS PREVENTING OR SLOWING DT**
Cst01	Constraints\Customer Inability	Customers including dealers not accepting change; not tech savvy
Cst02	Constraints\Employee Reluctance	Employee resistance to change
Cst03	Constraints\Financial Issues	No money to invest in digital
Cst04	Constraints\Lack of Technology Expertise	Lack of technology solutions expertise and people within company
Cst05	Constraints\Nature of Industry	Nature of industry; resistance to change
Cst06	Constraints\Need for Personal Touch and Trust	Customer need for personal touch
Cst07	Constraints\Owner Reluctance	Owner resistance to change
Cst08	Constraints\Previous Bad Experiences	Previous wrong decisions or bad experiences
Cst09	Constraints\Regulatory Environment	Constraints due to regulations
Cst10	Constraints\Remote Areas	Inability to access digital because of remote locations and connectivity
Def	**Definitions**	**Response to the question what is DT ?**
DM	**DT Decision Makers**	**Who makes the decisions?**
Prio	**Prioritisation**	**What is being done first/second and so on for DT ?**
Reco	**Recommendations**	**Specific recommendations for increasing DT**
RoI	**Return on Investment**	**Return on Investment**
Risks	**Risks**	**What are the risks of DT ?**
GoI	**Support from Government Bodies**	**Positive and negative role played by Government, MSME ministry etc.**
Tech	**Technologies**	**WHAT TECHNOLOGIES HAVE BEEN IMPLEMENTED**
Tech01	Technologies\Digital Transformation	Digital technologies currently used and being evaluated
Tech02	Technologies\Digitisation	Digitisation technologies currently being used or evaluated
Vend	**Vendor Selection Criteria**	**How are DT vendors selected ?**

Appendix 4: Propositions

P1: The higher the Owner/CEOs support, the greater the digital adoption

P2: The higher the influence of next-generation leadership, the greater the digital adoption

P3: The relationship between leadership transitions and technology knowledge increases as customer readiness increases

P4: The higher the role of professional managers, the greater the digital adoption

P5: The higher the degree of prior professional experience among Owners/CEOs, the greater the digital adoption

P6: The lower the owner-employee bond, the greater the digital adoption

P7: The higher the operational inefficiencies, the greater the digital adoption

P8: The higher the quality of analytics from digital implementations, the greater the subsequent digital adoption

P9: The higher the proportion of non-debt funding, the greater the digital adoption

P10: The higher need to expand to non-urban areas, the greater the digital adoption

P11: The higher the transparency in institutional support, the greater the digital adoption

P12: The higher the industry turbulence, the greater the digital adoption

P13: The higher the proportion of millennial customers, the greater the digital adoption

P14: The higher the ability of digital technology to replicate human interaction, the greater the digital adoption

P15: The higher the proportion of B2C business, the greater the marketing focussed digital adoption

P16: The higher the proportion of B2B business, the greater the operational focussed digital adoption

P17: The higher the availability of industry-specific platforms, the greater the digital adoption

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