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Managing Digital Knowledge for Ensuring Business Efficiency and Continuity

Purpose: Today many firms are pushed towards digitalisation to ensure business continuity and their survival due to Covid-19. Therefore, this study investigates the emerging knowledge management models in the era of digitalisation and disruption.

Design/methodology/approach: We have adopted a semi-structured approach composed of qualitative data collection from 37 business executives from India representing different industry sectors. We adopted a three-layer coding process (axial, open and selective) to develop a framework grounded in organisational information processing theory.

Findings: Scanning the business environment lead to understand the status of current and potential business through intelligence of information, whereas better planning and execution can be achieved through employing and utilizing the information intelligently that fits to the overall and strategic objective of the business. Overall, the business continuity can be obtained via information prosperity across the business by engaging diverse stakeholders. According to our findings, these aspects lead to the effective implementation of digital knowledge to ensure business continuity in uncertain business environment.

Practical implications: The study offer the insights for managing and executing the knowledge in digital platforms, where they can think of developing a system architecture on the basis of degree of uncertainty and information processing requirements for combining the knowledge.

Originality/value: The present study is unique, where it offers the meaningful visions to the designers and users of virtual knowledge management systems.

Keywords: Digitalization; Business Continuity; Organizational Information Processing Theory; Qualitative Research

Paper Type: Research Paper

1. Introduction

Most businesses have been hit by the recent uncertain business environment worldwide despite being well established especially during Covid-19 (Guerrieri et al., 2020; Nicola et al., 2020). Consequently, businesses had to redesign their operational processes, workspaces and business plans as quickly as possible (Li et al., 2021; McKinsey & Company, 2020). The current uncertain business environment induced due to Covid-19 poses many challenges for businesses besides simply disrupting supply chain functions and business transactions (PwC, 2020). Furthermore, co-workers who used to be close colleagues or even friends started to be seen as potential health risks, and maintaining their engagement was challenging. Making sure that everyone who is now working remotely has a common objective and vision also poses a challenge for leaders across organisations (Alrahbi et al., 2020; Forbes, 2020).

Uncertain times therefore created new challenges and imposed constraints across industries. This complex and uncertain situation is also an "infodemic" from a business survival point of view. The way in which business executives think and act becomes essential to address critical issues and guide the precise knowledge towards stakeholders (Lam et al., 2018). The emotional intelligence is required from leaders to facilitate the balance between preparing their staff and organisation for worse, but still sustaining high morale is very critical (Fessell & Cherniss, 2020; Palomba, 2018). Given the complexity and gravity of the uncertainty, business executives need new ways of ensuring business continuity. The ability to learn from the experience of others is critical to take well-informed decision in business. Uncertain business scenario has also forced organisations and their leaders to endorse digitalisation to maintain adequate knowledge, to prevent the spread of the virus, educate, warn and empower staff to lessen the impact of complex situations and ensure the sustainability of the business (Alrahbi et al., 2021). The use of digital agencies and practices can produce new digital models for the effective use of resources (Ågerfalk, 2020; Mendling et al., 2020). The literature highlights different perspective in knowledge management and lack in viewing it from information processing perspective that can facilitate the business continuity in dynamic environment. For instance study conducted by Merat & Bo (2013) explore the relationship between knowledge management and leadership in knowledge intensive organizations. Studies also indicated how the knowledge of stakeholders can be integrated to the development of new services (Pellizzoni et al., 2020) and how does rewards facilitate knowledge

sharing in virtual world of today (Wang et al., 2021), however the most pressing concern for companies recently due to Covid-19 was their survival and business continuity. Existing literature lack in studies that explores the role of information processing to develop a knowledge driven system to ensure business continuity. Therefore, this study focuses on information processing knowledge driven view to ensure business continuity in uncertain and dynamic environment.

Our study focuses on the creation of emerging knowledge management models for digitalisation during highly dynamic business scenario. We have applied organisational information processing theory (see for example Tallon et al., 2019; Huang et al., 2014; Lim et al., 2012) (OIPT) as a research lens. OIPT helps firms to acquire, process and disseminate comprehensive information in a cost-effective manner to ensure efficiency in these uncertain times. OIPT also facilitates the use of general and broadly dispersed information to achieve the desired performance. The research question for this study is: *What are the elements of a digital knowledge management model to ensure business continuity in highly dynamic business environment?* This study conducted an exploratory qualitative research (Klein & Myers, 1999) based on interviews with Indian business executives (n=37) to answer this question and aim to develop a knowledge driven framework to ensure business continuity in dynamic settings. Based on the existing literature and our findings, this study propose a knowledge management model for digitalisation to ensure a business continuity framework that can help business executives navigate the business successfully.

The rest of this article is composed of six sections. Section two presents a review of the literature on the concept. Section three describes the theoretical understanding. Section four describes the research design including data collection and data analysis. Section five presents the findings of data analysis, whereas section six discuss the implications for theory and practice. At the end in section seven we conclude the study.

2. Models for digital knowledge management

The organizational problems have become much more complex due to the ocean of data flowing from different sources and that pushes for adopting digital technologies for managing knowledge across the organization. In fact, the complexity and proliferation of data are changing the way organization capture, analyze and develop the knowledge to stake strategic decisions to operate their business operations. Organizations are redesigning their knowledge management models and

system to address the environmental dynamism. Knowledge management model of an organization helps in employing techniques to improve, analyze, organize, maintain, distribute and share their knowledge from tacit to explicit forms. The knowledge can be defined as set of rules that follow if-then logic and it the basis for digital knowledge utilizing artificial intelligence and other means for knowledge creation (von Krogh & Roos, 1995). The knowledge cannot be imported but is produced by individual as explicit knowledge about an organization. The documents acts as data for the reader and reader creates the knowledge about the organization by observing, discussing and socializing with other to verify his beliefs (von Krogh and Roos, 1995, p. 133). The knowledge management models have been viewed and discussed from different lenses, as pointed out by Berger and Luckman (1966) that people develop their world of knowledge on the basis of their social interaction and experiences. The process of creating the knowledge from social interactions is based on the set of expectations from an event (Boisot, 1998, p.20) and on these expectations individual design their actions. Information is gathered from data obtained in the form of sources those can be digital or physical to improve the knowledge. The digital platforms helps in developing the knowledge creation quickly.

Existing literature indicate three models in the space of knowledge creation from individual to group level. First, Wiig's (1999) knowledge-evolution cycle indicate that knowledge management process must be perfect and rational to draw worthwhile and valuable knowledge, so that it has clear perspective and purpose, congruency, connectedness and completeness. Second, Nonaka and Takeuchi's (1995) knowledge spiral discusses, how knowledge is transmitted from the individual to group and organization. The knowledge creation in this model flow from socialization to externalization (tacit to tacit) to combination (tacit to explicit) to internalization (explicit to explicit) and back to socialization (explicit to tacit). Third, Boisot (1998) presented the model of knowledge sharing in an organization on the basis of abstraction, codification and diffusion, where codification develops a form of knowledge and abstraction offers a structure that can be shared with others and diffusion guides the way which knowledge can be distributed in the organization.

Apart from these seminal approaches, other researcher have visualized the knowledge management from different perspectives. For instance, a six–stage model was developed by Ginevičius et al. (2011) for the construction industry of Lithuania and employed this model to improve the knowledge level of construction managers and related organizations and how

knowledge influenced behavior can be used to solve the organizational problems in a better way. Another study by Zanuzzi et al. (2020) discusses the digital transformation and knowledge management from agriculture sector of Brazil, where they identified people are dependent on technical assistance for agriculture knowledge. This indicate that existing studies lack in identifying the information processing needs and developing information processing capability for managing digital knowledge (Baptista et al., 2020; Tallon et al., 2019), which is essential for ensuring business continuity. Therefore, OIPT seems to most suitable for managing digital knowledge in today's organizations.

3. Theoretical underpinning

Digitalization across the business sectors have been appreciated due to the value it creates and offers. This is evident from the successful companies across globe such as Alphabet, Apple and Microsoft. In the last two decades the information processing has received the attention of many organizations due to boom on digital economy. The digitalization offers the limitless opportunities for businesses. Today, the firms need to be navigated frequently to form different ways to survive in the market, which is possible only if firms have access to knowledge and adequate information processing capabilities (Berraies et al., 2020). The emergence of many start-ups in young companies is supported by digital technologies. The firms today see the digitalization and emerging technologies as a guiding force to integrate the dispersed knowledge (Bereznoy et al., 2021). Recently business setting has become more turbulent and businesses are relying on information technology to drive their business processes successfully (Baptista et al., 2020). Different firms have different structure and mechanism of business operations, but the information processing needs remain the common element for everyone Hence, OIPT is more suitable here that can help organizations employing systems to develop different orientation to address the internal and external business situations.

Digitalization of business processes facilitates the information processing performance through identification of information processing needs and required capabilities for information processing (Tarafdar & Gordon, 2007). OIPT argues that the association between needs and capabilities can enable the organizations for achieving optimal business performance (Tallon et al., 2019; McLaren et al., 2011). OIPT advocate the system of creating self-contained tasks through a filtering mechanism to address the highly uncertain environment. Additionally, the backup of resources is

required to reduce to need of information processing to simultaneously reduce the impact of dynamic environment (Premkumar et al., 2005; Galbraith, 1973). Apart from automating and reduce of need for information processing, in certain areas in an organization, firms need to enhance the investment tactically to develop resilient information systems. The organizational structure and design is the resultant of interdepartmental and inter-organizational relations (Haußmann et al., 2012). Hence, adequate balance among focus on reducing and enhancing the capability for information processing is required.

According to OIPT to design and develop digitalization in uncertain environment in the business, it is essential to map the difference among amount of information needed for a business activity and amount of information already processed with existing infrastructure (Bento et al., 2014). Therefore, scanning and sense the business environment can help to close this difference. Apart from type of task and degree of uncertainty, the adoption and execution of an information based scheme finally depends upon the relative cost (Ward, 2012). The amount of information that need to be processed further depend on the variables such as "number of outputs", "input in terms of resources utilized", "the level of business performance to be achieved".

4. Research design

This study adopted a qualitative approach for two reasons: first, "which" and "what kind of" questions can be better explained through case studies (Walsham, 1995). Second, complex phenomena like information processing capabilities are multi-dimensional, so it is important to interact and understand the knowledge of different stakeholders compared to a quantitative approach (Klein & Myers, 1999). We selected companies operating in a highly competitive environment and understand the role of technology for knowledge management in uncertain times such as Covid-19. We considered the degree of complexity of potentially exploiting information processing capabilities in participating firms. The interview roster therefore included firms from manufacturing to information technology. Figure 1 presents the detailed roadmap adopted to conduct the study from the research gap identification to proposed framework and implications for practice and theory. We have conducted this research in four phases starting from planning, conducting, analysing, reporting and validating the findings through triangulation approach.
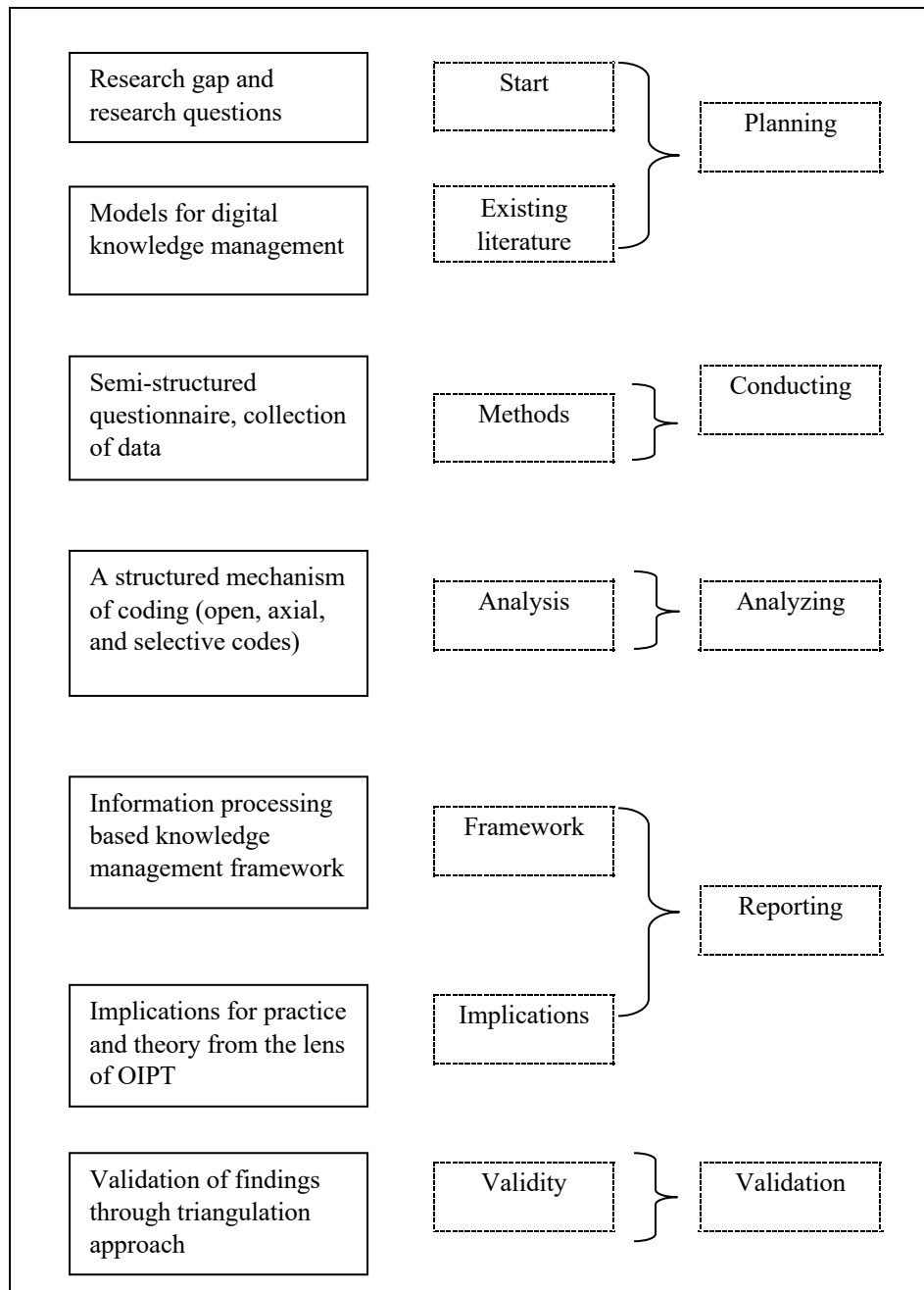
Figure 1. Research investigation framework

4.1 Data collection

Data collection was done over three months starting from April 2020 to June 2020. We conducted this study through the theoretical lens of OIPT (Huang et al., 2014; Pan & Tan, 2011). Along with

the interviews, we also referred to the online documents and websites of the companies involved to deepen our understanding. We also explored the literature to see how the findings of other studies correlated with the theoretical lens used here. The first step in data collection and analysis helped us correct our view on certain business issues and concerns during recent uncertain business environment emerged due to Covid-19. Additionally, through a review of the literature, our decision to apply OIPT was confirmed. In the initial stage, only indicative sets of themes were drawn up, which in turn was used to design the interview questions (Appendix B) and to allow for further analysis. After choosing a total of 129 organisations, we were able to interview 37 participants (Appendix A). We connected to the potential respondents through LinkedIn and shared the brief objective of the study in first contact. In the second contact, we have requested for 30 minutes interview schedule. On an average after three contacts we were able to interview 40 respondents, out of which finally 37 were considered for final analysis.

4.2 Data analysis

We used the common technique of axial, open and selective coding in this study. We applied these coding approaches to interpret and analyse the participant interviews (Huang et al., 2014; Lim et al., 2012). In the first stage, the information processing network and its ability to drive sustainable business operations was coded employing open technique by placing labels that explain the business operation process (Strauss & Corbin, 1990). In the second stage, we used axial coding to match open codes to theoretical constructs. In the third stage, we used the selective technique to define the phenomenon observed. We considered the role of information processing as a core phenomenon in driving continuity and efficiency to address the present degree of uncertainty. We also established the integration of axial codes and core phenomenon through back-and-forth investigation of the interview data (Strauss & Corbin, 1990) to drive the emerging information technology model.

A three-layered mechanism of coding was adopted to analyse the interview data. Interview responses were extracted as open codes in the first layer. The open codes were further mapped to the axial codes in the second layer. At the end we developed the selective codes on the basis of axial codes in the third layer. Study utilizes the triangulation approach to verify the selective codes emerged from the data collected in Table 1.

Table 1. Triangulation approach

Industry outlook	Academic articles	Interview data	Emerging themes
Gartner (2021) – To succeed in highly complex and uncertain environment enterprises should can the respond to disruptions continuously, because disruptions can undo the digital initiatives that enterprise have worked hard in past. Hence, there is a need to evaluate the trends beyond technology and its impact.	Papadopoulos et al. (2020) –Management and employees in the organizations can offer customer centric products and service by aligning the business activities to local conditions.	R27-Different organizations have their own style to protect themselves, pass through a disruption. The organizations develop strategies on the basis of the information and processing capabilities they have.	-Business environment scanning -Information processing -Alignment of business activities with local conditions
McKinsey & Company (2020) - In the remote environment it is advised that organizations can get benefit over, when the decision making process is asynchronous.	Bereznoy et al. (2021) - The execution is dependent upon the structure of planning and if execution is effective and there is no question to the structure of planning.	R31-In our case we use the decision polls to collect the data for a particular issue or if there is any alternatives. Either one can ask directly to the concerned to decide quickly.	-Quick sharing and decision making -Strategic planning and execution
Forbes (2020) - The business earlier had plans like to develop digital platform in the horizon from one to three years' time, now they have to scale their digital initiatives to survive their	Li et al. (2021) - The stakeholders in the businesses ranging from suppliers to customers have adopted the digital orientation to bring flexibility, transparency	R17- If one want to be in the game of business, then organizations have to devise the ways in which they are connected and can	-Engaging the stakeholders -Efficiency and continuous business operations

business in a matter of days and weeks.	and efficiency in business activities.	meaningfully engage the stakeholders.	

5. Findings

5. 1 Business environment scanning

Many businesses are facing encounters due to traditional planning and forecasting techniques that were prevalent prior to the recent pandemic. Present business scenario has increased VUCA (volatility, uncertainty, complexity and ambiguity) and exposed the inefficiency of traditional business methods (Millar et al., 2018). Therefore, the scanning of environmental factors such as the economic conditions of supply chain stakeholders and consumers, social trends and the competitive environment becomes critical (Shen et al., 2015). R15 indicated that *"for evaluation of business and local environment, one can view the competitive digital landscape and view the position of the organization*". The employees and management can observe the business activities of their competitors. To support this further R4 indicated that "information systems can be helpful in identifying the alternatives and scenarios that lead to analysing the current and potential business opportunities". Table 2 highlights the axial codes and related quotes for business environment scanning.

Table 2. Appropriate themes and quotes identified under "business environment scanning"

Selective Code	Axial codes	Supporting quotes from respondents and open codes
Business environment scanning	*Quick sharing and decision making*	*R2: Today, we are shifting towards a multi-stakeholder governance model due to increased inter-dependency of IS and firm performance. Therefore, top management team needs to ensure quick decision making by having robust information technology (IT) infrastructure. (Open code: leverage systems for analysing and decision making)*
	Monitoring & control	*R19: In these unprecedented times, the SMAC (social, mobile, analytics and cloud) model will help*

		businesses track the changing and competitive landscape. These technologies further help when estimating the factors driving growth and predicting trends for business opportunities in near future. (Open code: utilisation of handy devices to track the competition)
	Role of information processing	*R6: Challenges like availability of cloud service, connectivity to the internet and access to data at the end of the month from multiple users make it difficult to understand the prospective consumer. (Open code: challenges for information processing)*
	Ensuring efficiency and continuity of business operations	*R5: It is critical to align business strategy with IS and the governance model. Organisations can exploit ITIL (information technology infrastructure library) to enhance efficiency. (Open code: ITIL and strategic alignment)*

5.2 Planning & execution

The planning horizon for businesses has become very short as compared to stable business times due to increased uncertainty (Mirchandani & Lederer, 2012). Businesses therefore need to validate their planning and execution techniques. They need to redesign their risk and financial models along with the supply chain diagram. Firms need to maintain transparent communication from planning to execution of business activities to ensure continuity and efficiency (Palomba, 2018). In this unprecedented time, relationships with contracted parties also play a critical role along with their adequate engagement. According to R7 "*for better strategic planning on the basis of diverse information, the information systems need to have strong filtration capability that facilitate and modify the new offerings to the stakeholders*". R31 further emphasize that "*information systems need to align the filtered information to the degree of uncertainty that will ultimately help in achieving the strategic fit in complex environment*". Hence combined the utilization of information quickly while aligned with organizational objectives helps in achieving strategic fit that ultimately

contribute in ensuring business continuity and business efficiency. Table 3 highlights the axial codes and related quotes for planning and execution.

Table 3. Appropriate themes and quotes identified under "Planning & Execution"

Selective Code	Axial Codes	Supporting quotes from respondents
Planning & Execution	*Quick sharing and decision making*	*R7: To address consumer requirements, a firm can adopt centralised or distributed decision making that should cover operational, executive and commercial aspects. (Open code: balance among decision making and operational aspects)*
	Monitoring & control	*R31: An agile approach helps managers have continuous visibility of work. To ensure interaction and communication between teams, companies require suitable tools. This allows senior managers to track their daily work status. (Open code: Day-to-day monitoring)*
	Role of information processing	*R13: IS and IT should be exploited to develop processes and strategies to deliver services. Information processing can help in decoding the quality of service delivery and to find out whether this strategy can transition to the new normal. (Open code: Information processing to design the new normal)*
	Ensuring efficiency and continuity of business operations	*R6: Compared to the past, we have more access to training that enhances skills and operational excellence. Everyone from third-party workers to top leaders discusses the issues of planning, overloading, scheduling and analysis of reports to drive business as efficiently we can (Open code: Self-development to support the business)*

5.3 Keeping engagement and morale high

In uncertain and dynamic business situations, it becomes difficult for business to maintain appropriate communication with stakeholders (Choi & Wang, 2009). During Covid-19, people are staying at home and they have more time to communicate and respond online through social media or other platforms. Therefore, for long-term business success, stakeholders such as suppliers,

employees, customers and the community need to be engaged (Klein & Myers, 1999). In the work from home and remote environment it is expected that there is quick sharing of information. R22 highlight that "*digital platforms needs to be architecture in a way those can facilitate quickly and real time discussion not only with internal employees, but also with external stakeholders and offer a personal touch as well*". Therefore, in remote work environment the real time information can strengthen the information governance. R9 point out that "*information technology and digital platforms can be employed to connect to the internal and external stakeholders to bring the information prosperity across the value chains that further ensures the business continuity*". Table 4 highlights the axial codes and related quotes for keeping engagement and morale high.

Table 4. Appropriate themes and quotes identified under "Keeping engagement and morale high"

Selective Code	Axial Codes	Supporting quotes from respondents
Keeping engagement and morale high	*Quick sharing and decision making*	*R22: Enterprise social media platforms enable real time information sharing. For example, in the current lockdown situation, my organisation disseminates a daily security summary and does a headcount to monitor whether any employees are in a containment area. (Open code: Enterprise social media for engagement)*
	Monitoring & control	*R12: Apart from deploying Microsoft Teams, Zoom and SAP Qualtrics for business operations, we are tracking the well-being of employees. Further digitalisation helps prevent any lawsuits or immigration risks in case of business travel. (Open code: utilising technology beyond monitoring)*
	Role of information processing	*R24: Leadership in the coming months is likely to be more difficult than ever. Social media can help companies process tailored communications and must be inclusive to keep stakeholders motivated. (Open code: Continued interaction with and motivation of stakeholders)*

	Ensuring efficiency and continuity of business operations	R14: We have adopted a four-step technique, i.e. project, promote, adapt and enable, to ensure business continuity and stakeholder engagement that addresses any safety and job security-related issues. (Open code: Designing the workspace for changing situations)

5.4 Information processing view to ensure efficiency and business continuity

We adopted an iterative process with the view of OIPT theory, qualitative interview data and the evolving framework of digitalisation. The knowledge management model for digitalisation to ensure business continuity was developed on this basis and findings were integrated to shape the framework presented in Figure 2. The framework ensures that business efficiency and continuity are achieved through various aspects that fall under the scope of information intelligence, information utilisation and information prosperity. The detailed explanation will deepen our understanding in order to achieve business efficiency and continuity in uncertain times.

5.4.1 Employing information for intelligence

The strategic orientation and information processing capabilities of a business are sensitive to uncertainty caused by environmental dynamism (Van Knippenberg et al., 2015). Environmental dynamism tools are present in businesses in different forms, such as supply and demand uncertainty, changing customer preferences and business stakeholder capabilities, to name a few (Shen et al., 2015). R24 attested to this by emphasising that *"In these uncertain times, it is important for firms and top leaders to align business strategy, change leadership capabilities and resilient culture to set the right course"*. Similarly, R2 noted that *"Firm with agility in adoption and executing service design, service operations, service transition and overall service strategy have a better chance of survival and competence"*. Therefore, to complement environmental dynamism*,* the *construction of information quadrant* was established, where organisations can self-diagnose and process information for certain business scenarios. This leads them to *weigh business alternatives* in order to determine growth. This framework helps set and identify indicators based on the degree of complexity and offers a sense of the environment in order to adjust business activities.

5.4.2 Utilising the information

Decision making for a business during complex and uncertain period depend on the indications received in the form of market information (Roca et al., 2017). Since planning and execution are interdependent to facilitate close collaboration among different departments, the way in which a business aligns them with its strategy over the entire business is therefore critical (Goodell, 2020). To achieve this type of fit, the synchronisation of information processing capabilities in each department needs to be calibrated regularly (Tay et al., 2010). R28 confirms this by stating, *"Information technology infrastructure library (ITIL) can help to design and implement business activities in the form of capacity, contingence and cost planning to achieve a desired outcome".* Similarly, R9 highlighted that *"The system-wise architecture and its advanced applications help both knowledge and service workers to desired output in a project on hand".* The need for operational planning along with efforts towards effective implementation while not compromising firm values can help to create the *"design the filtration and match it to strategy"* system. This part of the model helps with top to bottom communication and involvement in order to understand the planning and execution strategy in uncertain times like current pandemic.

5.4.3 Monitoring information prosperity

Information and its use in a business is said to be beneficial if it advances the organisation as well as its stakeholders in quicker information flow and decision making (Li et al., 2016). Every stakeholder is working in their own interest, so this can be achieved by directing and launching information that ensures everyone's prosperity (Saldanha et al., 2017).

The challenge for businesses is to find a balance and to work together towards a common business objective. R34 noted that *"It is critical for businesses to adopt distributed computing to ensure visibility and progressive changes across the network. This will help advance information technology requirements and skills of each stakeholder for a common cause".* On similar lines, R12 emphasized that "*In this uncertain time firms are relying more on enterprise resource systems to ensure transparency among fragmented workforce locations and utilizing advanced solutions like chatbots to respond to customer queries on real time basis".* The objective of business continuity supported by each stakeholder has resulted in the establishment of *real time discussion and IT governance.* Combining the findings from coding mechanism and OIPT lens we have

reached to the development of framework presented in Figure 2. This two-stage framework ensures the engagement of stakeholders and reduces anxiety due to an uncertain business environment that helps in ensuring business continuity and efficiency.
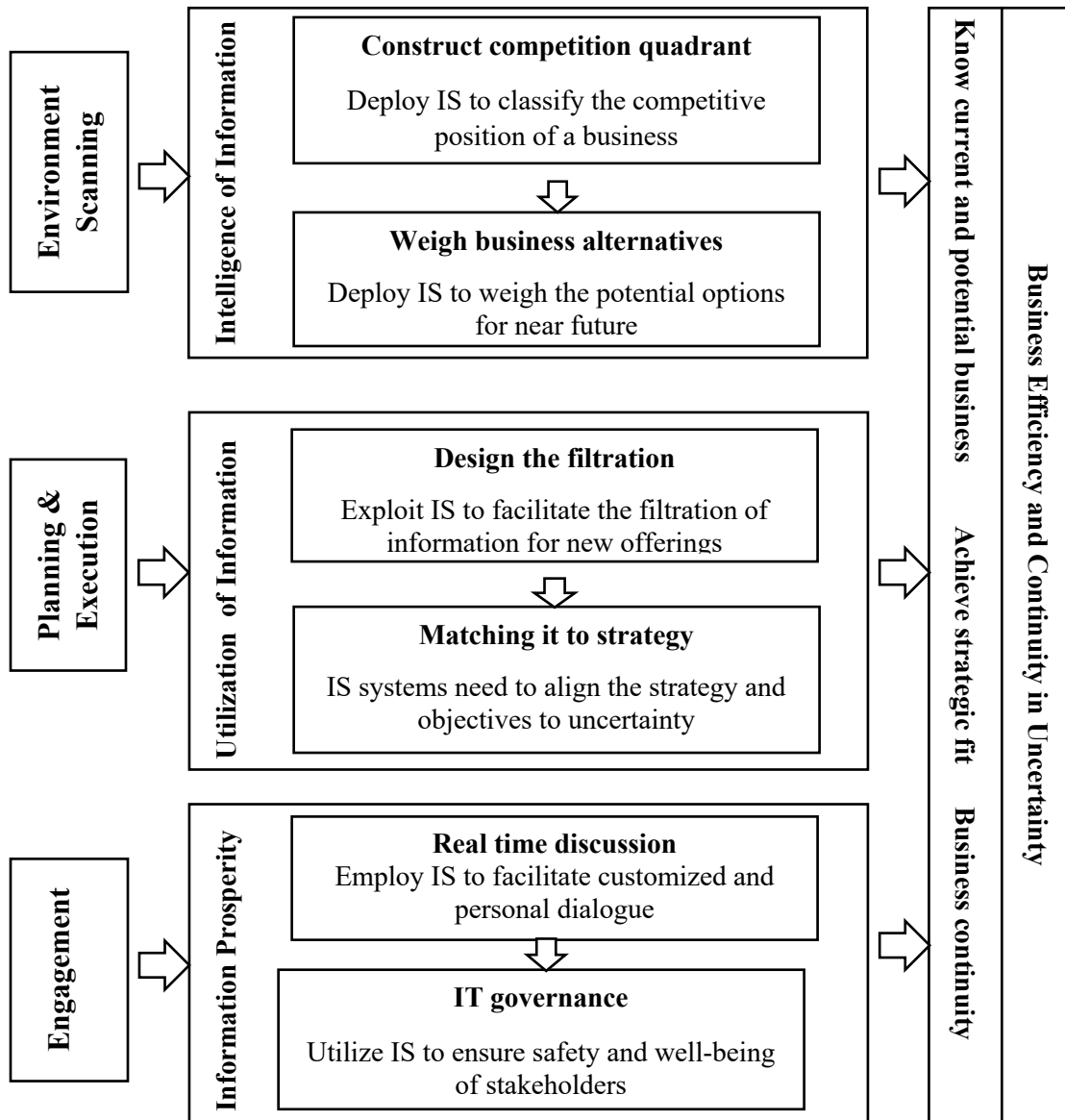

Figure 2. Elements of a digital knowledge management model to ensure business continuity

6 Discussion

6.1 Implications for theory

The organizations ranging from government to private are affected by the spread of current uncertain business environment. During Covid-19 period of last few years there has been several changes in the management of business and stakeholder participation towards business objectives (Seetharaman, 2020). After a struggle for two-three months of the said restrictions, organizations have been able to develop technology and tools to strengthen the knowledge management activities across business. The information processing and digitalization capabilities of the organization helps to achieve the information prosperity for effective knowledge integration to drive the business growth and continuity (Pellizzoni et al., 2020). The framework proposes an iterative process of knowledge management by adapting digital transformation strategy. The application of OIPT facilitate firms to get benefits on (i) leveraging technology for business operations (ii) removing location barriers via remote working (iii) supporting climate change. Apart from the energy and matter requirement for most of the business organization, information have become the core to human societies and businesses (Legner et al., 2017). Earlier studies have either worked on the view of stakeholders or managers, but lack in considering the role of information on digital knowledge management to ultimate ensure the continuity of business (Merat and Bo, 2013 Wang et al., 2021). This study indicates that OIPT helps the organizations to view information both as objective and subjective element to facilitate the real time decisions and self-reflection in business decisions. Witnessing the emerging role of technology in managing knowledge in uncertain times the themes like storage of infinite information, automated information analysis and fast and real time decision making have emerged. The development of technology and information processing capabilities can help firms to scan the business environment and integrate the knowledge to change their services and IT strategy (Bereznoy et al., 2021). Organizational information processing capabilities can help in setting up a system for firms to view their competence and weigh the alternate options (Saldanha et al., 2017). This will certainly help the organizations to take informed decisions and better equipped with precise knowledge. Firms often struggle to integrate the dispersed knowledge of large group decision makers. OIPT come to the rescue of this issue of large-scale group decision making by employing digital platforms and employing evolutionary

algorithm at back end to offer optimal knowledge and match it to the tactical requirement of the firm in uncertain time (de Reuver et al., 2018). Further, OIPT facilitate the customized information sharing among stakeholders which is important for appropriate and knowledge driven IT governance to ensure business continuity and run business activities efficiently.

This study contributes to the literature in three ways. First, our study brings out an empirical evidence of digital information processing model for adequate knowledge. The study results and findings help define a structured process of emerging digitalization model that supports knowledge integration to back OIPT- an important element for any theory to advance. These elements include environmental scanning, planning & execution and engagement. Second our study institutes a strategic fit supported by filtering the information and matching it to uncertainty conditions in the business. Hence, our study addresses the main research gap: *What are the elements of a digital knowledge management model to ensure business continuity in highly dynamic business environment?* This is one of the pressing concerns for most of the business organizations operating across industries (Li et al., 2016). The results of our study coincide with existing studies on uncertain business environment and emerging technologies (Papadopoulos et al., 2020; Newkirk & Lederer, 2006; John Benamati, 2001), where organizational information processing and knowledge flow has become a key element in defining the digital market competition. However, the existing studies lack in developing an information system view to ensure the business continuity, which further support the knowledge oriented IT governance in virtual environment (Wang et al., 2021). On one hand this study contributes to advance OIPT to explore the emerging model of digital knowledge management and business continuity, on other hand it challenges the traditional business models influenced by information technology.

Third, this study contributes in combining information systems and strategic fields to address the different concerns in running the business. We acknowledge that perspective related to cost theory and incoherence theory are not enough to address the concerns posed by highly dynamic environment. Therefore, to address the complexity and ensuring desired business performance virtual era a three-step approach can be helpful, i.e., information intelligence, utilization and information prosperity that ultimately ensure a robust knowledge management approach. Further our study can be used as a guideline for executing a formal control (input, behaviour and outcome) in digitalization initiatives of the organizations (Wiener et al., 2016).

6.2 Implications for practice

The knowledge management is entirely different in digitally driven organizations as compared to traditional organizations. The findings of our study can be treated as useful guidelines by organizations managing the knowledge while operating in highly dynamic environment and looking for OIPT enabled digital knowledge management to ensure business continuity in their organization even certain disruptions occur. Before, thinking about developing a system architecture in the support of digitalizing the business activities, firms and their executives need to examine (i) the *urgency and need* to address digital business activities for knowledge management (ii) on hand knowledge management *capabilities* (iii) degree of *uncertainty* present in the related business environment (Premkumar et al., 2005). The digital technologies have removed the challenge for executives to assume data as complex object and today managers with the help of digital technologies can accelerate the flow, development and disseminating the knowledge across hierarchies. Therefore, the digital technologies can facilitate just-in-time and contextual knowledge management in complex business environment.

The environment scanning with existing IS infrastructure can help managers to scan the present knowledge management conditions and competence in market that facilitate the decision making. Further, the practicing managers can employ systems to identify alternate business options to ensure business continuity in uncertain times. Managers can evaluate and analyse the knowledge scenario where competition quadrant can be developed to monitor the progress in future and map strategic orientation of different functions towards digitalization and address the situation. The managers need to localize the global knowledge to match the degree of uncertainty to right course of action and adequate level of integration. With the initiatives of digitalization for integrating the knowledge across business functions may develop certain systems, whereas others require patient development of OIPT principles in the system architecture to gain competitive advantage to ensure business continuity.

The interaction of degree of uncertainty, existing knowledge processing capabilities, organizational objectives and stakeholder orientation may challenge managers to derive the business efficiency and continuity. Therefore, managers need to analyse and understand the

information processing requirement as a first step that will help firms later to harness the real time creation, capturing and integration of knowledge for effective decision making for business continuity. Managers need to take a call for investments in digital technology in the view of its return on investment and probability of creating the knowledge intensive environment. Also managers need to view the role of process, people and technology to drive knowledge management. Managers also can view how digital channels of communication and quick decision making can develop a knowledge sharing behaviour among employees and other stakeholders. The digital knowledge management can further enable managers to offer timely virtual investigation to the issues and challenges on continuous basis.

7   Contributions and Conclusion

Our study contributes to the literature in different ways. First, it adds to the literature on efficiency and importance of knowledge management for business continuity during uncertain times to ensure a business continuity framework. Past research has mainly focused on facilitators and previous experience with regard to efficiency, which is one side of knowledge management (Ritter & Gemünden, 2003; Grewal et al., 2001), and very few studies involve business continuity, especially in pandemic times (Cerullo & Cerullo, 2004). In addition information processing capabilities helps in integrating the dispersed knowledge to ensure business continuity has received little attention in the literature (Iyer & Bandyopadhyay, 2000). This study also contributes to the utilisation of information processing from different perspectives, ranging from the scanning of the business environment to the engagement of stakeholders (Ahituv et al., 1998) especially in the continuously changing business landscape. The proposed framework indicates how information processing capabilities can help firms in the era of uncertainty through knowledge management. In addition, the study supports and addresses the positive role of information processing capabilities to drive business performance.

Additionally, this study has some limitations. First, the information processing view of business continuity has developed new concepts such as intelligence of information, utilisation of information and information prosperity. Though the definitions of these concepts are presented, but measurement parameter and tool are lacking. Future research could prioritize on developing

and testing measurement tools for these concepts. Second, the qualitative data may suffer from errors related to the respondent's mindset (Glick et al., 1990). We have carefully designed the study to minimise these effects by choosing respondents with an understanding of information processing and a verification procedure that was implemented to ensure data triangulation. In this study, we focused on efficiency and business continuity via the role of knowledge integration. Future research can focus on enhancing financial performance during highly uncertain times through the lens of dispersed knowledge and how institutional pressures can drive the continuity of a business. Finally, in today's highly uncertain and complex era, the business environment is very turbulent and many knowledge management researchers may want to pursue research on how information and new forms of knowledge can enable businesses to sustain themselves during these difficult times.

Declaration of Competing Interest

The author(s) state that this study does not have any competing personal or financial interest that may influence the work reported.

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Appendix A. Demographic profile of respondents

Demographic profile	Frequency
Gender	
Male	30
Female	7
Total	**37**
Education	
Graduate (General)	3
Masters (General)	8
Graduate Engineer	23
Masters (Engineering) and PhD	2
MBA & PhD	1
Total	**37**
Domain of Work	
Digital Business & E-Commerce	3
Energy and mining	3
Services (Consulting, Financial, Tourism, Research)	7
Government & Not for Profit	2
Electronics & IT/ITeS	10
Manufacturing and Construction	6
Pharma and healthcare	2
Telecom (Services and Infrastructure)	4
Total	**37**
Position in the Organization	
CXO / Director / Vice President	3
Senior Manager	6
Middle Management	17
Technical Analyst	5
Analyst / Admin	6
Total	**37**

Work Experience	Standard Deviation
Average: 6.9 years, Maximum: 18 years; Minimum: 2 years	3.3 years

Appendix B. Semi-structured interview protocol

1. How the new era enterprise solutions are affecting business broadly?

2. What are the top 3 critical barriers among cloud computing capabilities in the current era, which made it a challenge for you to deliver your work through cloud-based services?

3. This enforced change of work from home has made the experience of work very different from your past experience. How do you feel technologies like enterprise social media could have helped you in connecting with colleagues?

4. In an era where all work is getting disrupted due to pandemic, employees are working from home extensively using IT, can you explain which model of IT leadership and governance is likely to be more effective and why?

5. If you were to invest your time in academic programs during the pandemic situation, what do you feel could have been done to improve the delivery of academic course in current times where the regular mode of classes were disrupted?

6. If you would be enhancing your technical and managerial skills, what would you recommend to change about the online delivery of classes to make it more enriching and enjoyable for the participants?