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Socio-economic and technological new normal in supply chain management: lessons from COVID-19 pandemic

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Socio-Economic and Technological New-Normal in Supply Chain Management: Lessons from COVID-19 Pandemic

Abstract:

Purpose: This paper explores the new-normal activities and strategic responses of the service industry towards the challenges created by the COVID-19 outbreak and other constructs and validates the measurement scale for socio-economic and technological new normal activities following lockdown and social distancing practices.

Research Approach: Firstly, structured interviews with 28 participants helped us generate items and develop survey instruments for cross-sectional data collection in the second phase. So, we received 256 complete responses from the top and middle management of the services industry. Exploratory factor analysis helped us explore the factors and reliability of the items. Confirmatory factor analysis aided us in generating and confirming the factorial structure of the constructs.

Research Findings: Results indicated that amid COVID-19's pandemic, new-normal activities are emerging in which organizations are deploying crisis strategies to safeguard their business and stakeholders. Organizations are re-opening swiftly, focusing on digital transformation, developing digital platforms for ease in working, and improved consumer services, to name a few operational changes.

Practical Implications: Discussion on empirical analysis revolves around the guidelines to service industry's managers and top management to improve shortcomings in combating the challenges they face in their operations.

Originality: Prior studies have provided substantial insights on the COVID-19 Pandemic, but relatively little research exists on new-normal activities in the supply chain network of the service industry. Among other reasons for such less empirical evidence on new-normal activities is the unavailability of a comprehensive tool for measuring the socio-economic and technological new normal activities. Being this paper is a contribution to bridging this knowledge gap.

Keywords: *COVID-19, Socio-Economic, Technological, New-normal, Supply Chain, Service Industry, scale development.*

1. Introduction

The year 2020 had been challenging for human beings, which will be remembered as the most challenging year in history as the world faced a novel coronavirus disease that has affected the lives and livelihoods of people and presented the most significant challenges for organizations. Coronavirus disease, now named COVID-19 was first reported in December 2019 in Wuhan, China (Abiad et al., 2020). On March 11, 2020, the World Health Organization (WHO) declared

it a pandemic, continuing its spread to over 205 countries, with 200 million confirmed cases and death toll fast approaching over 4.3 million as of 5th August 2021. The COVID-19 Pandemic has affected the lives and livelihood of everyone and triggered a whole new realm of challenges, particularly for business organizations (Brem et al., 2020; Buheji et al., 2020). The evolution and implications of the COVID-19 crisis are still unfolding, and no one can anticipate how long it will last. Hence, it is necessary for organizations to stay diligent and adapt to a wide range of new business activities and arrangements to survive and manage the risk that comes along (González-Torres et al., 2021; Zhu et al., 2017).

The COVID-19 Pandemic has changed many aspects of business operational activities, primarily work from home, developing a digital workplace, using information technology, and maintaining employee social distance (Tuzovic and Kabadayi, 2020). Service industries such as banking, tourism, hospitality, air travel, cruises, and road transportation have suffered significant losses due to supply chain destructions (Belhadia et al., 2020; Hao et al., 2020). This pandemic has highlighted the supply chain's potential issues and its vulnerability in fulfilling market and consumer demands (Mollenkopf et al., 2020). The task is uniquely challenging for the services sector as they rely heavily on in-person interaction. Physical distancing, excluding non-essential processes, and reduced interaction are all important aspects of maintaining public health, but they also pose significant challenges for these companies regarding reaching out to consumers and meeting their needs and expectations (Gossling et al., 2020; Aburumman, 2020). Most of the companies in the service industry, specifically those involved in the tourism and hospitality business, are struggling hard to maintain their services, while others are shutting down, which creates significant consequences for employee's well-being (Kabadayi et al., 2020). Simultaneously, amid uncertainty, service organizations may need flexibility for the duration of new public-health interventions and future economic recovery. Businesses must plan to succeed in a world where today's emergency turns into a new way of doing business for tomorrow. Disruptions in the supply chain and sudden changes in consumers' behavior suggest the need for transformation in the underlying processes involved in the supply chain of the services sector (Mollenkopf et al., 2020; Ramirez et al., 2020; Wu et al., 2016).

A recent study by Lee and Lee (2021) stated that the current Pandemic has lifelong impacts on traditional operating methods, particularly among the services sector. Hence, this crisis calls for solid responses by the organizations to combat the challenges they face and at the same time efficiently adapt to new-normal to survive in the industry. Aliche et al. (2020) reported that organizations worldwide are undergoing disruptions in production and logistics activities due to instability in the supply chains. According to Baldwin and Tomiura (2020), the COVID-19 crisis can be the catalyst for organizations to review their strategies and operations. Appropriate alignment with IT systems and providing support for the evolving work requirements have been considered influential in managing supply-chain issues (Craighead et al., 2020). Organizations should work closely with suppliers to achieve flexibility in payment and procurement processes and develop fiscal plans to manage their cash flows (Zhu et al., 2020). The Pandemic has also increased the need for broader communication and with wider audiences. The changes due to

COVID-19 have required the greater integration of remote teams and reinforced the importance of constant, transparent, and direct communication among stakeholders. Notteboom and Haralambides (2020) stated that stakeholder-relationship-management initiatives have become essential for organizations to acquire new suppliers, retain customers, ensure worker satisfaction, and meet other stakeholder expectations. Hence, organizations have restructured their facilities and operations to protect their workforce and mitigate financial and operational exposure (Elavarasan and Pugazhendhi, 2020). Moreover, the shift towards a collaborative and innovative culture is also visible in companies' supply-chain departments that have encouraged innovations during COVID-19. Craighead et al. (2020) used several theories to examine how supply-chain managers have reacted to pandemic situations. The author emphasized resource-dependency theory and suggested that organizations need to reduce dependency on external entities for necessary inputs, and many have taken actions to reduce this reliance. For example, a paradigm shift is emerging to favor new domestic sources to manage supply-chain disruptions and financial challenges (Ivanov and Dolgui, 2020). Against this background of a rapidly evolving novel infectious disease caused by a newly discovered coronavirus, this paper aims to;

- explore the new-normal activities and strategic responses of the services industry towards the challenges created by the COVID-19 outbreak,
- construct and validate the measurement scale for the socio-economic and technological new normal of COVID-19.

As this situation is unprecedented, there is no single scale or instrument to measure COVID-19's implications towards social, economic, and technological activities. Therefore, it is vital to understand the prominence of the services industry's social, economic, and technological standings, their coping strategies, and the need for management policies to combat the impact of the Pandemic. Various studies have focused on organizations' innovation strategies and strategic responses towards the current Pandemic (Wang et al., 2020; He and Harris, 2020). According to Pantano et al. (2020), some industries have immediately reacted to the current Pandemic by proposing targeted interventions to cope with social, economic, and technological challenges. The results of these studies do not follow an empirical examination. Consequently, this paper delves deeper into the new normal activities of this crisis following lockdown and social distancing practices for handling post-pandemic situations in emerging economies such as that of the United Arab Emirates (UAE). So, this research contributes to the existing body of knowledge on the socio-economic and technological new-normal activities in supply chain management of the services sector and provides a basis for a more profound investigation of the topic.

The structure of the remainder of this paper is a literature review (section 2), theoretical background (section 3), research methodology (section 4), hypotheses testing results (section 5), discussion including theoretical and policy implications (section 6), recommendations and future research directions (section 7), followed by the conclusion (section 8).

2. Literature review

Initially, COVID-19 as an epidemiological crisis has prompted severe economic, social, and technological challenges (Laato et al., 2020). This paper discusses the economic, social, and technological new-normal and strategic responses to cope with supply chain issues prompted by COVID-19. Mollenkopf et al. (2020) stated that the COVID-19 crisis had created a series of new challenges in the supply chain network that the management must respond to (Sharma et al., 2021). Presently, social distancing, lockdown, and work from home practices are helping to counteract the spread of COVID-19; nevertheless, such public health policies will consequently promote the business transformation, remote working capabilities, and digital transformation of social and business infrastructure (Noda, 2020; Talwar et al., 2021a). Indeed, business transformation and remote communication technologies are gradually taking place in all services sector areas, specifically in the supply chain management networks (Mollenkopf et al., 2020). Organizations are trying to cope up with the profound economic, social, and technological challenges to adjust to a new normal of doing work smoothly (Lenzen et al., 2020; Talwar et al., 2021b).

To some extent, these organizations have responded with changed work routines, flexible hours and work locations (work-from-home options), protective barriers between employees, to name a few operational changes (Mollenkopf et al., 2020). For instance, due to movement control orders, the demand for home delivery services has increased. Hence, supply chain managers adapted their supply replenishment systems and order fulfillment processes and recruited new staff for order picking and home delivery services (Dodds, 2020; Tandon et al., 2021).

The suppliers or producers are now offering home delivery services (Talwar et al., 2021c). Some suppliers and retailers have rapidly adapted to the increased demand by developing innovative methods to serve consumers by creating "dark-warehouses," essential delivery centers with retail stores catering exclusively to online customers with no physical customers present (Broughton, 2020).

Moreover, technology adoption plays a significant role in business transformation and resolving supply chain management issues (Buheji et al., 2020; Cichosz et al., 2020). It helped to accelerate business changes that have been under discussion for a long time. The COVID-19 crisis can be the catalyst for organizations to review their strategies and operations. Business agility is now a must to survive. Companies are investing more in technological updates to support workers, reinforce the sense of collaboration and community (Tønnessen et al., 2021). Organizations worldwide educate their staff on maintaining safety measures and remote working processes (Baldwin and Tomiura 2020). The employees use different alternative arrangements to communicate with the management. Appropriate alignment with the IT system and providing support to the evolving work requirements have been considered influential in managing supply chain issues (Craighead et al., 2020). Management is working closely with suppliers to get flexibility in payment and procurement processes. The organizations are working hard to develop a treasury plan to manage their cash flows effectively (Zhu et al., 2020). This pandemic has pushed the need for broader communication and with wider audiences. The change due to COVID-19

imposed a greater integration of remote teams and reinforced the importance of constant, transparent, and direct communication among the stakeholders. The recent research findings indicate that worldwide organizations have faced significant challenges during this Pandemic (Amankwah-Amoah, 2020; Galanakis et al., 2021). Their manufacturing and operating activities meet an extensive curtailment. It is vital to undertake measures that would significantly reduce production and operational costs, allowing businesses to endure this tough time and eventually return to normal economic operations (Brem et al., 2021; Zou et al., 2020).

Thus far, prior studies have only considered the economics of the pandemic, its impact on the health, education, social life, ecological and energy domains (Mofijur et al., 2020; Ceylan and Ozkan, 2020). Nevertheless, prior studies are yet to empirically validate and confirm the practical solutions and new-normal for the social, economic, and technological impacts of Covid-19. Pathirana (2020) conceptualized the strategic financial and social responses to COVID-19 among the construction industry, while Buheji and Ahmed (2020) explored the possibilities and importance of the socio-economic effects of COVID-19 and how to deal with them to eliminate their "opportunity cost" on the following normal. Kaushal and Srivastava (2020) have also found vital learnings for the hospitality and tourism industry amid COVID thorough qualitative investigation. The dominant sub-themes that emerged from the qualitative inquiry included the need for multiskilling and professional development, increased sense of hygiene, sanitation, and related SOPs, optimism toward the industry's revival, media roles, and need for better crisis preparedness. Hence, this study considers the limitations of past studies and takes any opportunity to properly conceptualize new-normal construct based on contingency theory and develop a measurement scale for the dimensions of social, economic, and technological new-normal activities that emerged in the service industry.

3. Theoretical background (Contingency Theory)

The contingency theory posits that there is probably no best way to solve management problems in all organizations in various situations. In other words, the leaders or management plan to deal with different situations varies (Arifah et al., 2018; Craighead et al., 2020). This theory presents the interaction dynamics between the influential leaders and workers in facing any situation. The occurrence of any kind of crisis affects the demand and supply chain of products and services that can damage the entire economy at both micro and macro levels and pose a threat to the global economic system (Boiral et al., 2021; Zimmermann et al., 2020). The contingency theory's principle provides optimism and promotes the belief that, under the right circumstances, almost everyone will become an excellent leader to deal with the crisis. Leaders must find a role for themselves and collaborate with their staff to guide them to effectively control the disease (Subri et al., 2020). According to Obrenovic et al. (2020), organizations without adequate contingency and business continuity plans will suffer significant post-crisis financial losses. Therefore, successful organizations have to put contingency and risk management plans in place at the onset. Kim and Kreps (2020) stated that at the beginning of the COVID pandemic, the U.S. government violated the notion of contingency theory by failing to adopt creative and responsive strategies to

address the threat. Global leaders need to focus on learning the immense magnitude of such crises in the future and carefully evaluate the economic actors and social and technological implications. A more comprehensive understanding of the calamities and consequences of the potential turmoil may help the organization formulate various strategies to cope with the challenges caused by such events. Knowing the consequences and formulation of productive tactics and pre-planned strategies could help organizations reduce at least the impact of the possible crisis.

Organizations develop appropriate contingency plans to identify risk events, restructuring, telework development, and business resumption to manage risks (Boiral et al., 2021; Ali et al., 2021). Obrenovic et al. (2020) argued that organizations with a financial contingency plan along with diversified supply chain networks, distributed leadership and workforce, and advanced digitalization would enable them to sustain themselves during emergency and disastrous situations. Subri et al. (2020) stated that to survive and successfully control the current situation, organizations need to adopt responsive strategies in line with the goal stated in contingency theory. This research framework is a descriptive tool presenting the theoretical approach, comprising the flexibility and adaptability of leaders, organizational effectiveness, workforce protection, and technology adoption to mitigate the risks of the COVID-19 pandemic. The following sub-sections present organizational challenges and new-normal activities in the context of contingency theory and new-normal activities.

3.1 Leaders' adaptability to potential change

Contingency theory proposes identifying the aspects related to any circumstance to enable the system to adapt in the case of any eventuality (Lartey, 2020). Effective leadership must adapt to a modified level of operations and maximize output without fostering burnout during a prolonged crisis such as the COVID-19 Pandemic. Leadership that preserves an open-door policy for team members maintains a resilient and flexible mindset and is more adaptable can deal effectively with challenging conditions (Obrenovic et al., 2020). In responding to the current Pandemic, organizations need to put adaptive governance mechanisms into practice and swiftly take actions to cope with the emerging challenges (Janssen and Haiko, 2020). In this context, Thomas et al. (2020) stated that to reduce the economic and social implications of COVID-19, the top management in organizations need to focus on consumer preferences and restructure its business for the next normal. The recent report by Deloitte (2020) stated that COVID-19 had forced many companies out of their comfort zone, with the limits of remote working encouraging health and safety practices. The adaptability of the management to the new normal in managing the emerging socio-economic and technological risks in an organization, its processes, and its policies should result in resilience and growth, as opposed to fragility and decline.

3.2 Organizational effectiveness

Organizations face multiple challenges, from the health, safety, and well-being of employees to disruption in the supply chain, from social responsibility to legal obligations, from working-capital shortages to the complete closure of operations, and from customer communication to cybersecurity. According to Worzala (2020), most organizations worldwide are ill-prepared to

navigate through these uncertain times. Ernst & Young (2020) surveyed 500 board members and CEOs worldwide and found that around 80% of board members were unprepared to deal with significant risk events like COVID-19. Lartey (2020) indicated that organizational effectiveness is a central pillar of contingency theory as it is essential in the adaptation and survival of organizations in dealing with the challenges caused by the Pandemic and in achieving their objectives. Organizations can achieve stable and secure work experience, job security, trusting relationships, employee satisfaction, and social cohesion and inclusion (Thomas et al., 2020). As ways of working have changed dramatically due to the COVID-19 Pandemic, organizations' top management need to find new ideas to help reduce costs, sustain trust, acknowledge employee efforts, and improve both products and the quality of customer services.

3.3 Workforce protection

Workforce protection is a notion embedded in contingency theory that represents a leadership style to get the best from workers, creating flexible and suitable working structures that benefit everyone (Obrenovic et al., 2020). Organizations have witnessed several challenges due to the Pandemic, including remote-work policies and flexible-workforce arrangements, which have required global organizations to improve their IT systems to facilitate effective communication between management, employees, suppliers, and customers (Kilpatrick and Barter, 2020). Most organizations worldwide have started resuming work; therefore, leaders need to consider how to restart business operations, including addressing issues such as the impact on their workforce's well-being and confidentiality amid the ongoing Pandemic. Top management must pay additional attention to workforce planning and the quality of goods or services they provide to the market (Kilpatrick and Barter, 2020).

3.4 Technology adoption

Contingency theory posits that there is no "one right way" because any response depends on the situation (Arifah et al., 2018). The leadership in the organization needs to think afresh in any case and decide on the best next step to take. The recent restrictions due to the Pandemic have forced workers to work from home, which has made workers and organizations more dependent on technology (Kniffin et al., 2020). The technological advancement of the fourth industrial revolution, with emerging and enabling technologies including 5G, artificial intelligence (AI), machine learning, big data, internet of things (IoT), blockchain, virtual reality, and cloud computing, is having a significant impact on improving businesses by enhancing the accuracy of data and encouraging data sharing with stakeholders (Brem et al., 2020; Khan, 2020). A digital-technology-enabled workforce can work from home and handle professional tasks from smartphones, tablets, laptops, and computers to keep businesses afloat during the current crisis. Organizations employing technology, such as cloud computing, digital payment, virtual meetings, and video conferencing can create resilience to future threats by applying work concepts and practices. The contingency theory offers hope and understanding that everyone can become a leader and formulate effective strategies that could help deal with the potential crisis at hand with the right situation.

4. Research Methodology

This paper focuses on constructing and validating the measurement scale for socio-economic and technological new normal activities amid COVID-19. Accordingly, this study followed the scale development and validation process suggested by a well-established framework by Churchill (1979) that comprised four steps, as shown in Figure 1. Step 1; deals with items generations through literature review and data collection using qualitative interviews, step 2; values with initial data collection. Step 3 deals with scale dimensionality and reanalysis, and step 4; deals with scale validation. Various researchers follow the same steps. For instance, Tsaur et al. (2016) used these steps to develop and validate the scale on destination brand identity. Shamim et al. (2017) followed these steps to construct and validate the customer value co-creation attitude scale.

In the first step, an exploratory approach collects data from service organizations in the UAE. A total of twenty-eight (28) in-depth interviews with administrators and experts at middle-level to top-level management from four major service industries (banking, telecom, tourism, and hospitality sector) explored the new-normal activities during the current pandemic in their organizations. Seven candidates represented each service industry. Experts expressed an entire supply network, i.e., procurement, operations, administration, human resources, and customer relations departments. The interviewees report their remarks on the socio-economic and technological new-normal activities in the supply chain network of the service industry during COVID-19. Their responses were filtered, in the second phase, into a compiled list of valid indicators. Appendix A shows the output of this qualitative study.

An exploratory factor analysis (EFA) in SPSS discovered factors and reliability of the items through SPSS 24.0. Following that, self-administered questionnaires collected quantitative data from the top and middle management of 15 companies in the tourism, telecom, banking, insurance, and IT sectors of UAE for purification and validation of the items. Lastly, confirmatory factor analysis in AMOS 21 generated and confirmed the factorial structure of the socio-economic and technological new-normal constructs. The following section presents the detail of the steps undertaken for the development of the new-normal activities scale.

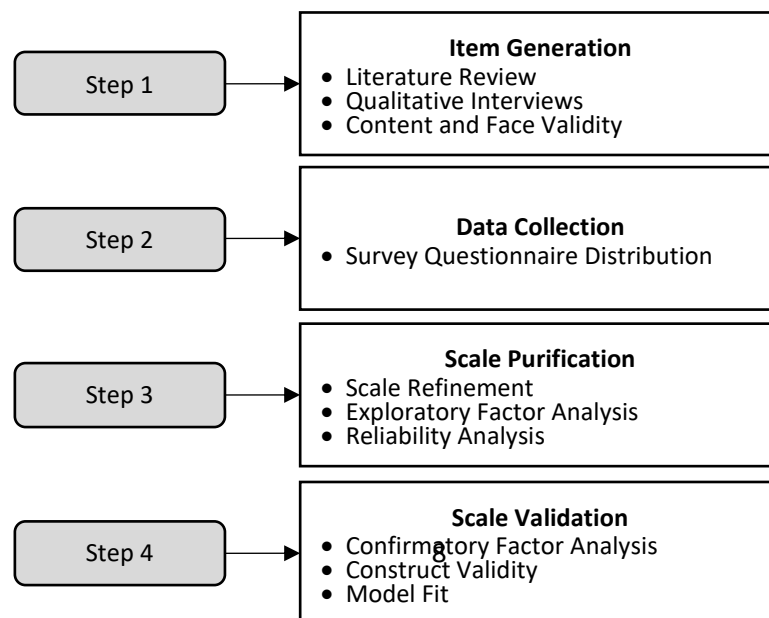


Figure 1. Scale development procedure (Churchill, 1979)

4.1. Step 1: Item Generation

Since the COVID-19 Pandemic is a novel infectious disease caused by a newly discovered coronavirus, there is no single existing instrument available to measure its implications for the organizations' social, economic, and technological activities. Hence, to measure COVID-19's social, economic, and technical implications, this research developed a new survey instrument based on the literature and twenty-eight (28) in-depth interviews with middle-level to top-level management in banking, telecom, tourism, and hospitality sectors. The reason to choose the middle to top-level management is their broader exposure to the current circumstances and operational environment. They responded to open-ended questions through online platforms (Zoom and MS Teams). This approach permits interviewees to freely express their views and understandings on the subject and allows the researchers to explore further and understand the phenomenon. All sessions of the discussion were informal and lasted around 50 to 60 minutes. They also added their remarks on the new-normal of the current pandemic. Lastly, the interviews were self-transcribed and then analyzed through the deductive coding method using the thematic approach. Figure 2 presents the steps that this research followed for thematic analysis. Thematic analysis analyzes data derived from the set of texts obtained through interviews (Maguire and Delahunt, 2017).

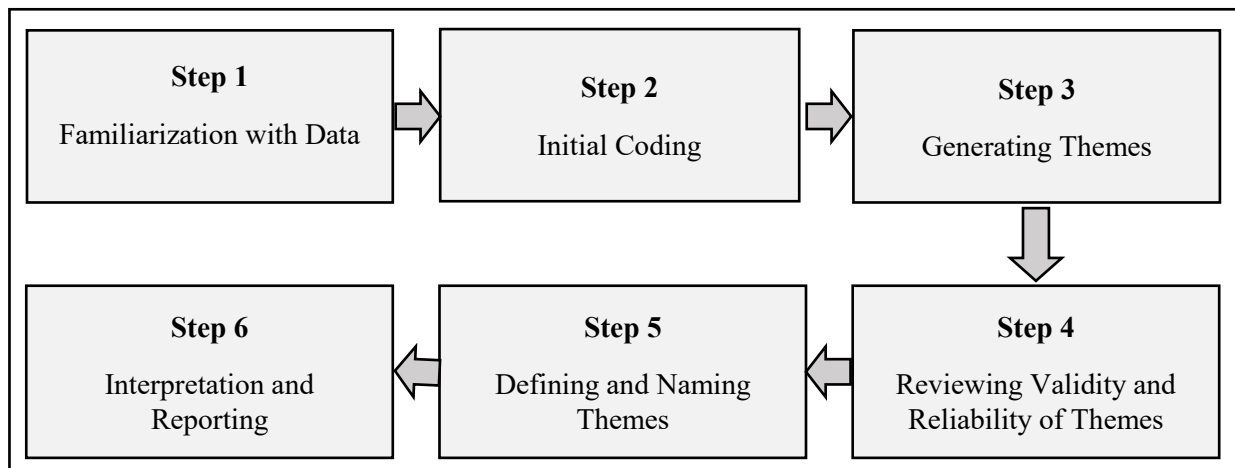


Figure 2. Steps of the thematic analysis. (Clarke et al., 2015)

The findings from the interviews indicate that several activities become the new normal in this critical time see Appendix A. In general, the new-normal activities include; the organizations are re-opening swiftly and transforming the business operations by taking various initiatives. Most of the new initiatives focused on new capabilities such as the internet of things, robotics,

artificial intelligence, and other leapfrog technologies. Some organizations have re-aligned their product mix in partnership with SMEs and startups (Flavie, 2020). The companies stay connected in new ways with the employees and customers, increasing team collaboration and strengthening the stakeholder relationship (Brem et al., 2020).

The organizations in the service sector are developing digital platforms for ease of working, improved consumer services, and activating social media to communicate with potential customers (Belhadia et al., 2020). Moreover, they are maintaining safety and personal hygiene and focus more on the health and well-being of their employees. Thus, this Pandemic is a lesson that has revealed the fragility of the supply chain management issues and its innate potential to meet societal needs and protect and improve human well-being and, ultimately, society (Mollenkopf et al., 2020).

A total of 65 items (First order element/items) were obtained from interviewers representing three aggregated new-normal dimensions such as *social* (21 items), *economic* (24 items), and *technological* (20 items) in this initial process. Experts from academia (two Associate Professors, one Ph.D. researcher, and two Ph.D. students) tested the validity and feasibility of all items. The items recommended by at least three experts were retained (Shamim et al., 2017). Six items were dropped in this process, and 59 items were kept verifying content validity and face validity and used for data collection from the sampled companies. See final research instrument presented in Appendix B.

4.2. Step 2: Data Collection

The questionnaire was distributed among the respondents to get their opinion about social, economic, and technological new-normal activities. The items in the questionnaire were as concise as possible, with care taken on the actual wordings and phrasing of the questions. The questionnaire of this study consists of two sections, Section A and B. Section A comprised both dichotomous and multiple-choice questions that extracted the background information related to the designation of the respondents, the business sector in which the company operates, number of employees, and total revenue of the organization. On the other hand, section B encloses five-point Likert scale-type questions. All items used a 5point Likert scale ranging from 1 to 5 from "strongly disagree" to "strongly agree." The questions queried on new normal activities resulted from the current Pandemic.

In total, we sent this questionnaire to 265 middle and top-level managers of 15 companies involved in the tourism, telecom, banking, insurance, and IT sector of UAE. Table 1 shows the company profiles of these respondents. The majority of our sample comprised of companies operating in the banking sector (33.33 %), followed by (26.66%) in tourism, (13.33%) in the insurance sector, (20%) involved in IT-related services, whereby only (6.66%) in the telecom

sector. Nine out of 265 responses were excluded as they had some missing values. Of the 256 respondents, (35.9%) served in the organization as part of Top Management, and (64.1%) acted as *Middle Management* employees. The number of employees in our sampled companies was (30.9%) were having employees less than 500, (47.2%) respondents were from the organization having 500 to 1000 employees, and (21.9%) were from the organizations having more than 1000 employees. The descriptive results also revealed that the most significant proportion of the respondents (46.1%) were part of the organization having a revenue of more than 50millions, followed by (28.5%), having revenue of more than 10millions and less than 50millions, and (25.4%) respondents were from the organization that had revenue of less than 10millions. Organizations from different ownership structures also represented the respondents. For instance, (71.1%) respondents were from domestically owned organizations, (14.8%) were from foreign-owned bodies, and (14.1%) respondents were from organizations owned by both local and foreign bodies.

Table 1: Profile of the respondents

Characteristics	Category	N	%
Responding Companies Operating in (n= 15)	Tourism	4	26.66%
	Banks	5	33.33%
	Insurance	2	13.33%
	IT Related	3	20.0%
	Telecom	1	6.66%
Serving in Organization as part of (n= 256)	Top Management	92	35.9%
	Middle Management	164	64.1%
Number of Employees in Organization (n= 256)	x < 500	79	30.9%
	500 < 100	121	47.2%
	x > 1000	56	21.9%
Revenue of the Organization (Millions) (n= 256)	x < 10	65	25.4%
	10 < x < 50	79	28.5%
	x > 50	118	46.1%
Ownership of the Organization (n= 256)	Local	182	71.1%
	Foreign Body	92	14.8%
	Mix	36	14.1%

4.3. Step 3: Scale Purification

Sampling adequacy for our scale was tested with Kaiser-Meyer-Olkin (KMO), which suggests a minimum acceptable value of 0.5 (Malhotra et al., 2003). The results indicated that the KMO value is 0.884, sufficient for exploratory factors analysis (EFA) (Kaiser and Rice, 1974). The measure of sampling adequacy (MSA) indicates how strongly each item or element in the matrix correlates with others (Hair et al., 2014). MSA values were above 0.70 for all items found by the anti-image correlation matrix, suggesting a high degree of inter-correlation between the items (Kaiser and Rice, 1974). These results validated the use of exploratory factor analysis (EFA).

Consistent with Shamim et al. (2017), this study used SPSS 21.0 for running EFA, with Principal Component Analysis (PCA) extraction method for EFA. The rotation process of EFA followed the Promax rotation technique with the Kappa value at 4. In EFA analysis, the cut-off value of 0.50 for factor loading is considered acceptable. It was determined to keep only those items with no cross-loading. Initially, we found nine factors from 59 items in the pattern matrix based on Eigenvalue. This structure was: 17 items on factor 1, 11 items on factor 2, nine items on factor 3, seven items on factor 4, four items on factor 5, three items on factor 6, four items on factor 7, and 2 items each on factors 8 and 9 respectively. Altogether, we deleted 40 items for their loading scores of less than 0.60. The recent study by Grace et al. (2020) retained 20 items out of 57 items representing four brand fidelity factors in data reduction and dimensions identification procedures. Shamim et al. (2017) stated that the item with factor loading (>0.50) is considered satisfactory while proposing a new scale. Against that background, the factor loadings of items across all four dimensions have shown factor loading (> 0.50), which confirms high communality. After deleting 40 items, the remaining 19 items loaded on four factors (factor 1, *economic new normal* 8 items; factor 2, *social new normal* 4 items; factor 3, *technological new normal* also four items, and factor 4, *COVID outbreak*, three items). The results of EFA analysis are depicted in Table 2, indicating factor loading above 0.60 of all items in the four factors matrix. The Cronbach's alpha value of all factors was more significant than 0.80, acceptable for further analysis.

Table 2: Results of exploratory factor analysis (N = 256).

Items	Four-Factors extracted based on Eigenvalues			
	1	2	3	4
ENN1	.924			
ENN2	.908			
ENN3	.894			
ENN4	.862			
ENN5	.835			
ENN6	.760			
ENN7	.708			
ENN8	.687			
SNN1		.949		
SNN2		.898		
SNN3		.826		
SNN4		.815		
TNN1			.900	
TNN2			.895	
TNN3			.762	
TNN4			.742	
COV1				.903
COV2				.784
COV3				.701

- Extraction Method: Principal Component Analysis.
- Rotation Method: Promax with Kaiser Normalization.
- a. Rotation converged in 5 iterations.

4.4. Step 4: Scale Validation

After performing EFA, AMOS 21 validated the socio-economic and technological perspective of the new normal measurement model following lockdown and social distancing practices amidst COVID-19. This step of the scale development process includes confirmatory factors analysis (CFA), construct validity, and model fit.

In the first step, CFA follows the result of detailed EFA. The four factors shortlisted as a result of EFA were then corrected using maximum likelihood extraction. Figure 3 presents the results of CFA, which shows the loading of all (19) items. The exogenous variable, namely the COVID-19 outbreak's factor loading, ranged from 0.52 to 0.88. The first endogenous construct, namely, *economic new normal*, indicates factor loading ranging from 0.79 to 0.88. The second endogenous construct, namely *social new normal's* factor loading, ranges from 0.81 to 0.85. Also, the third endogenous construct, such as *technological new normal's* factor loading, ranges from 0.54 to 0.95.

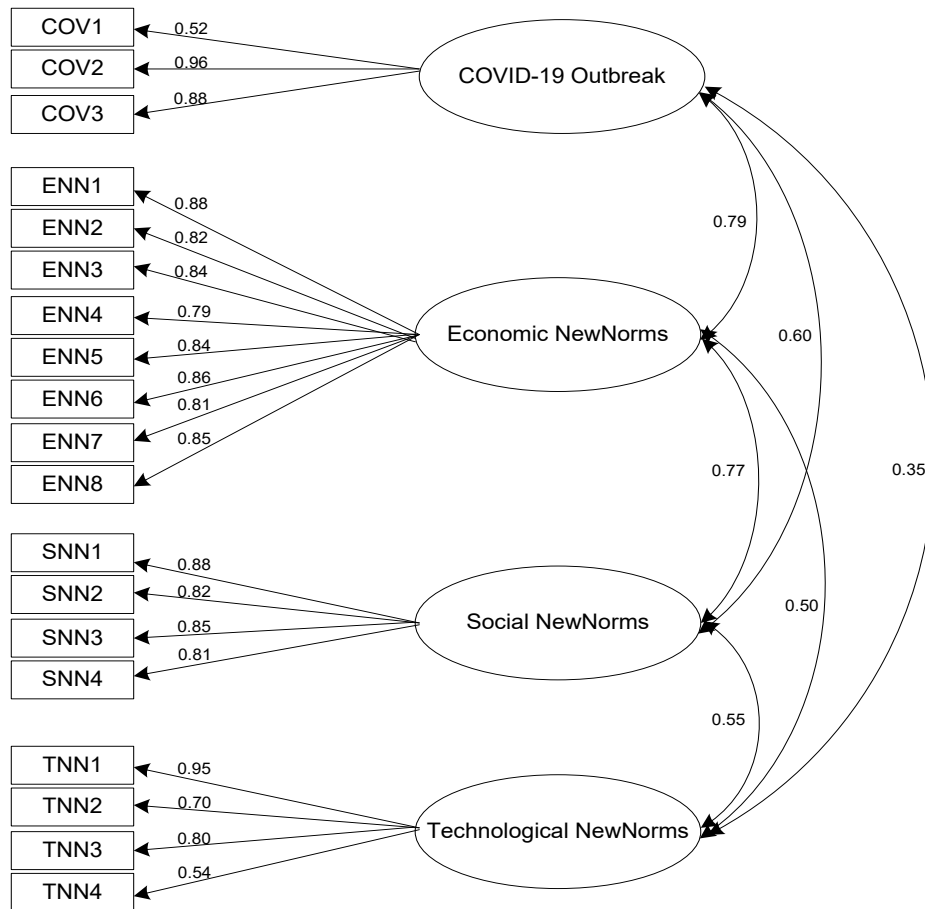


Figure 3. Confirmatory factor analysis

Secondly, we checked the reliability and validity of the constructs. Table 3 presents the results of the model's validity. The results indicated that the composite reliability (CR) of all four factors are above 0.70, for instance, *COVID outbreak* 0.84, *economic new normal* 0.94, *social new normal* 0.90, and *technological new normal* 0.84 confirming the reliability of the scale. Such values show signs of convergent validity. Moreover, the average variance extracted (AVE) for the factors was more significant than the threshold level of 0.50: *COVID outbreak* 0.65, *economic new normal* 0.698, *social new normal* 0.692, and *technological new normal* 0.582. (Hair et al., 2014; Kaur et al., 2016). The values of AVE are higher than inter-construct correlations that affirm the discriminant validity of the scale.

Table 3: Convergent and Discriminant Validity

Dimensions	CR	AVE	Economic new normal	COVID-19	Social new normal	Technological new normal
Economic_NewNormal	0.949	0.698	0.836			
COVID-19	0.845	0.659	0.792	0.812		
Social_NewNormal	0.900	0.692	0.766	0.601	0.832	
Technological_NewNormal	0.844	0.585	0.496	0.352	0.547	0.765

No Validity Concerns

Thirdly, we tested the model fit through the maximum likelihood method of the goodness of fit. Table 4 presents the results of model fit with threshold values. The model fit indices showed a good fit between the constructs. Absolute fit indices measured through CMIN/DF are found at 4.75, near the threshold value of 3, and are considered acceptable. The value of the CFI index (Index of Comparative Fit) is 0.93, which is higher than the cut-off value of 0.90. Hence it can be interpreted as excellent (Hu and Bentler, 1999). Standardized Root Mean Square Residual (SRMR) that shows the difference between the observed correlation and the model implied correlation matrix indicated the value of 0.057, which is an excellent model fit (Hu and Bentler, 1999). One of the most informative measures for a good fit is the RMSEA (Root Mean Square Error of Approximation) index. Prior studies such as Joreskog and Sorbom (1993) suggested that an RMSEA value of less than 0.06 indicates a "close fit," The value less than 0.09 offers a good model-data fit. The RMSEA value of our model is 0.094, which means a good model fit.

Table 4: Model fit measures

Measure	Estimate	Threshold	Interpretation
CMIN	694.239	--	--
DF	146	--	--
CMIN/DF	4.755	Between 1 and 3	Acceptable
CFI	0.93	>0.90	Excellent
SRMR	0.057	<0.08	Excellent
RMSEA	0.094	<0.09	Acceptable

The results of step three of the scale development strengthen the model's credibility and, hence, evidenced the model fit, reliability, and validity of the constructs. Table 5 presents the factor loading, CR, AVE of all the items.

Table 5: Complete model

Item Code	Constructs	Items	Factor Loading	CR	AVE
		Please show the extent to which you believe Social, Economic & Technological New-Normal triggered amid COVID-19 has the feature described by the statements.			
ENN1	Economic New Normal	Dynamic Framework to Manage Supply Chain Risks	0.924	0.949	0.698
ENN2		Improved Risk Propensity	0.908		
ENN3		Business Continuity Programs	0.894		
ENN4		Handling Treasury Issues	0.862		
ENN5		Reduction in Variable Costs	0.835		
ENN6		Using Resources Efficiently and Effectively	0.760		
ENN7		Allocated Budget for Health and Safety Measures	0.708		
ENN8		Procurement of Necessary Supplies	0.687		
SNN1	Social New Normal	Virtualize day-to-day Operations	0.949	0.900	0.692
SNN2		Online Customer Support Systems	0.898		
SNN3		Increased Team Collaboration	0.826		
SNN4		Strong Stakeholder Relation Management	0.815		
TNN1	Technological New Normal	Implementation of Digital Management Systems	0.900	0.844	0.585
TNN2		Optimizing Production and Distribution Channels	0.895		
TNN3		Developing Digital Platforms for Ease in Working	0.762		
TNN4		Training and Simulation Programs	0.742		
COV1	COVID-19	New Regulations (social distance, face mask, temperature, COVID-19 test)	0.903	0.845	0.659
COV2		Management of Social Distancing Norms	0.784		
COV3		Work from Home	0.701		

5. Hypotheses Testing

Organizations worldwide have started resuming their operations amid the ongoing Pandemic. The top management put additional efforts to resolve supply chain management issues and additional attention to the quality of goods or services they provide to the market (Kilpatrick and Barter., 2020). Different industries and companies are adapting to new approaches to deal with the challenges they face. Companies are putting bottlenecks to avoid overcrowding in their premises, while others strictly follow the WHO's measures on preventing the spread of the virus. A recent study by Obrenovic et al. (2020) argued that organizations with a financial contingency plan, diversified supply chain networks, distributed leadership and workforce, and advanced digitalization would enable them to sustain themselves during emergency and disastrous situations. To combat the technological challenges in the supply chain network, organizations are taking

various initiatives such as improving remote working capabilities and going towards digitization. Specifically, the organizations have started; training and simulation programs; enhancing cybersecurity; implementation of digital management systems; optimizing production and distribution channels; reliability and efficiency of automated services; cloud computing and artificial intelligence; empowering robotics technology; using i-procurement in purchasing; virtual currencies; and mobile payments systems (Brem et al., 2020). Besides that, the organizations are also developing digital platforms for ease in working, improving consumer services; anti-cyber-crimes programs; free access to information, online exchange of documents, activating social media to communicate; electronic monitoring of online violations; fraud-detecting tools; and business intelligence systems. To cope with the connectivity and communication issues and to keep the employees engage in the organizations, they have implemented new norms and standards, which includes; work from home practice; virtualize day-to-day operations; increased online communication; new traveling procedures; increased team collaboration; strong stakeholder relationship management; online training and simulations programs. Based on these findings, this research predicts that several practices became new normal that significantly influence the operations of the organizations, as shown in Figure 4. Subsequently, this research aims to empirically validate the most urgent areas such as social-economic and technological new normal arose among the services industry.

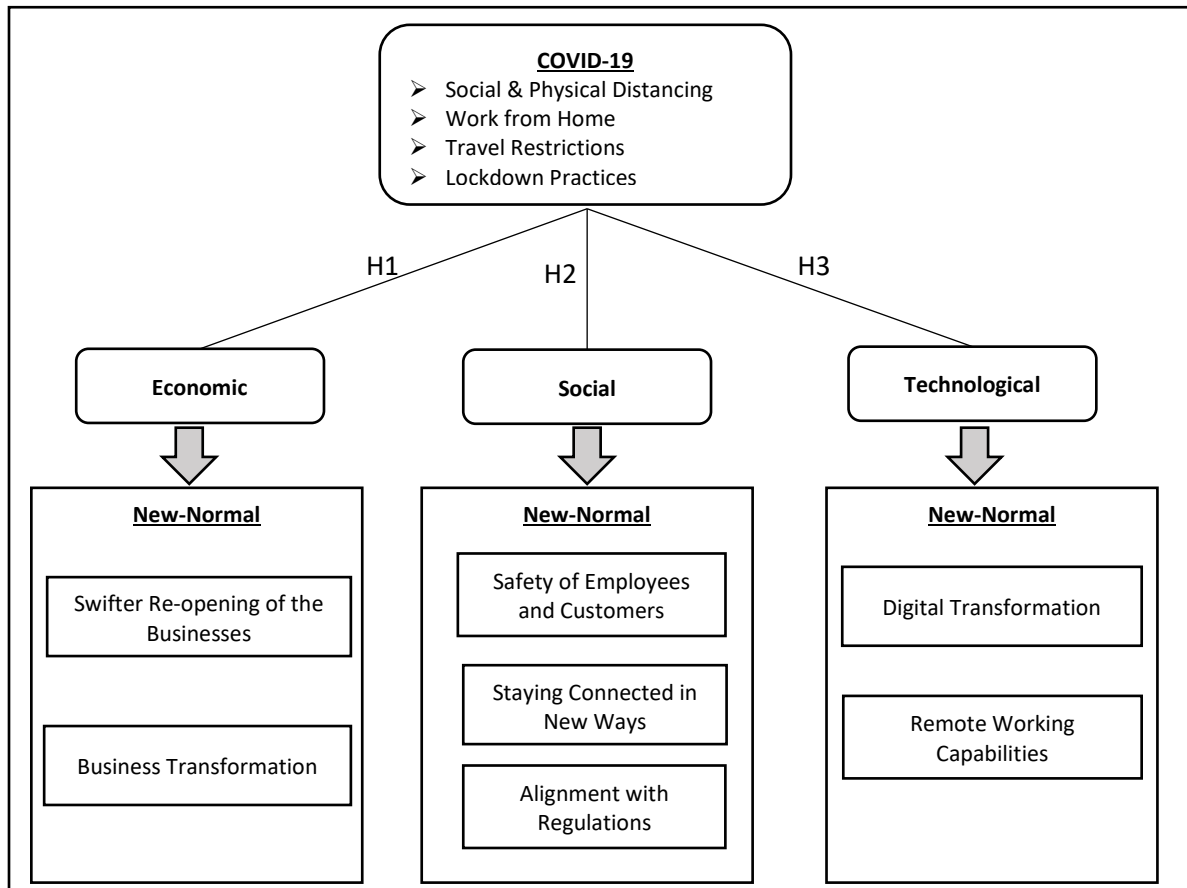


Figure: 4. Research framework

Thus, the following hypotheses are formulated based on Figure 4:

H1: *COVID-19 outbreak has a positive influence on the economic new normal activities.*

H2: *COVID-19 outbreak has a positive influence on the social new normal activities.*

H3: *COVID-19 outbreak has a positive influence on the technological new normal activities.*

In this section, further analyses were performed through the structural model to test the formulated hypotheses. The choice to conduct a structural model is justified as the study tests the formulated hypotheses grounded by a theoretical underpinning following (Kaur et al., 2021). We used the path coefficients of the structural model to estimate the hypotheses, as shown in Figure 5. The results of **H1** found that the standardized path coefficient path (β) between the relationship of *COVID-19* and *Economic New Normal* is 0.83, and $P < 0.001$. Hence, **H1** is supported. This shows that the services sector is quick to deploy crisis strategies to safeguard their business and stakeholders. The organizations in the services sector are re-opening swiftly and transforming their business operations by taking various initiatives. The results of **H2** indicated the standardized path coefficient Path (β) between the relationship of *COVID-19* and *Social New Normal* is 0.67, and $P < 0.001$. Hence, P-value confirms that **H2** is also supported. The results of this hypothesis indicated that social distancing does not have to mean a social disconnect. The sampled companies have embraced the new normal in adopting new technologies to stay connected with employees and customers, increasing team collaboration and strengthening the stakeholder relationship (Brem et al., 2020).

Moreover, they are maintaining safety and personal hygiene and focus more on the health and well-being of their employees. And finally, the results of **H3** indicated that the path coefficient Path (β) between the relationship of *COVID-19* and *technological New Normal* is 0.41, and $P < 0.001$. Hence, **H3** is also supported. This shows that the services sectors emphasized digital transformation, particularly developing digital platforms for ease of working, improved consumer services, and activating social media to communicate with potential customers (Belhadia et al., 2020). Table 6 presents the results of the hypotheses testing (H1, H2, and H3).

Table 6: Hypotheses testing results

Hypotheses	Endogenous	Path	Exogenous	Estimate	S.E.	C.R.	P	Remarks
H1	COVID19	→	Economic NewNormal	0.832	0.152	5.476	0.001	Supported
H2	COVID19	→	Social NewNormal	0.468	0.05	10.55	0.001	Supported
H3	COVID19	→	Technological NewNormal	0.935	0.171	5.69	0.001	Supported

Based on the structural model results presented in Figure 5, the coefficient of determination (R^2) for the dependent variable economic new normal activities was 0.65, social new normal activities were 0.43, and technological new normal activities was 0.17. This shows that 65 percent of the economic new normal activities are predicted by the COVID-19 outbreak (β 0.81***), and that 43 percent of the social new normal are explained by the COVID-19 outbreak (β 0.67***). Thus, high effects were detected for these two dependent variables in the structural model, namely economic and social new normal activities, with R^2 more than 26 percent (Shamim et al., 2017; Cohen et al., 2013). On the other hand, the coefficient of determination for the dependent variable, namely technological new normal, was 17 percent, which shows a medium effect as the R^2 value is found less than 26 percent (Cohen et al., 2013). Hence, based on the obtained results, it can be concluded that amid COVID-19's pandemic, new-normal are taking place in which organizations deploy crisis strategy to safeguard their business and stakeholders. Organizations are re-opening swiftly, focusing on digital transformation, developing digital platforms for ease in working, and improved consumer services, to name a few operational changes (Brem et al., 2020).

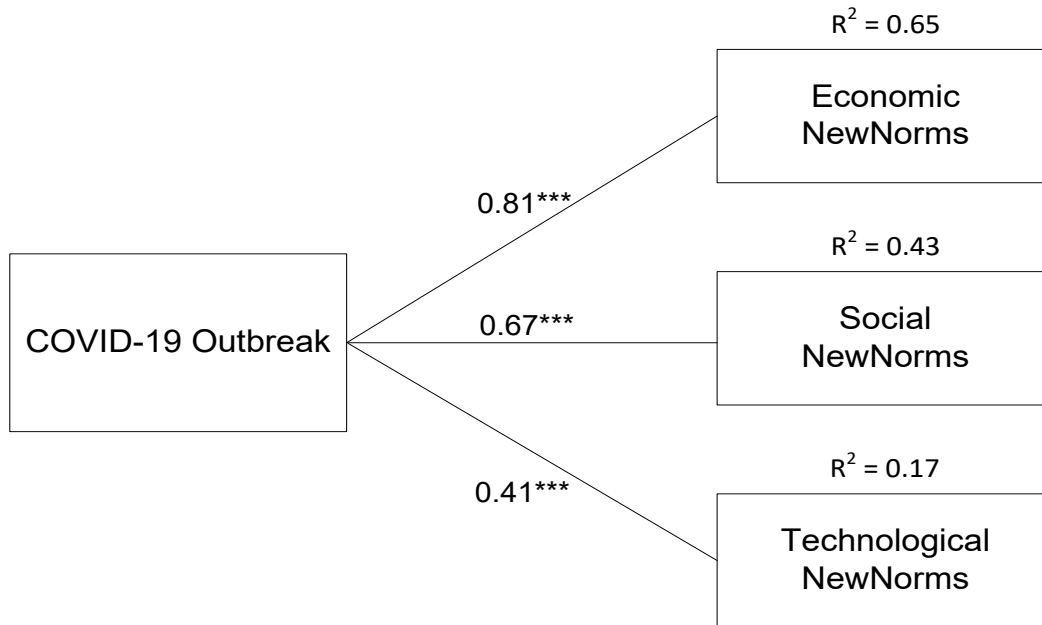


Figure 5: Structural model

6. Discussion

6.1. Theoretical Implications

This paper provides substantial insights into the current literature by conceptualizing and validating a new scale of socio-economic and technological prospective new-normal amidst the COVID-19 outbreak in the supply chain management network of the services industry. Since last year in the academic world, the implications of COVID-19 have been under discussion. Relatively little research exists on new-normal activities. One of the reasons, among others, is the unavailability of a comprehensive tool for measuring the new normal activities triggered by the current Pandemic. A literature review on new normal activities initiated by COVID-19 helped us theorize the new normal constructs. The new normal constructs comprised of three dimensions,

including socio-economic and technological new normal activities. This study indicates over time the uncertainty about the length and magnitude of this pandemic. Organizations need to respond and prepare themselves to transform their operations to the new changes. It was found that the services industry, including air travel, cruises, and road transportation, has suffered significant losses due to a reduction in travelers (Belhadia et al., 2020; Hao et al., 2020; Khanra et al., 2021). These headwinds not only worsen economic activities but also present the greatest challenges for business organizations. The top three significant impacts are the organizations' social, economic, and technological aspects, which considerably changed the organizational priorities (Kraus et al., 2020; Sigala, 2020). The organizations took unprecedented measures to respond to these challenges to keep their businesses functioning.

The organizations are now trying to re-open and transform their businesses to the current strategic response and new normal in the economic activities (Sigala, 2020). They take multiple steps, such as efficient and productive usage of resources; purchase of the required supplies; distribution of the budget for health and safety measures; improved decision-making; efficient retailer and dealer management; alternative credit services; creation of SMEs; enhanced risk propensity; and emphasis on inventory control. Other steps that companies are taking to engage with clients and staff are; simulated corporate meetings; a complicated system for handling risks in the supply chain; optimizing internet shopping; new investment opportunities; transfers of electronic money; the conception of modern infrastructure; revamped spending plan; use of insurance for the business interruption; services for business continuity; budget provision for research and development; expedition of receivables; and reduction of variable costs (Kraus et al., 2020). Most of the new initiatives focused on new capabilities and advancements such as the internet of things, robotics, artificial intelligence, and other leapfrog technologies. Some organizations have re-aligned their product mix in partnership with SMEs and startups (Flavie, 2020). The companies stay connected in new ways with the employees and customers, increasing team collaboration and strengthening the stakeholder relationship (Brem et al., 2020).

Moreover, they are maintaining safety and personal hygiene and focus more on the health and well-being of their employees. Services sectors, particularly developing digital platforms for ease in working, improved consumer services, and activating social media to communicate with potential customers (Belhadia et al., 2020). Furthermore, the organizations are taking various initiatives such as improving remote working capabilities and going towards digitization. Specifically, the organizations have started; training and simulation programs; enhancing cybersecurity; implementation of digital management systems; optimizing production and distribution channels; reliability and efficiency of automated services; cloud computing and artificial intelligence; empowering robotics technology; using i-procurement in purchasing; virtual currencies; and mobile payments systems (Brem et al., 2020).

6.2. Practical and Managerial Implications

According to Sardak and Movchanenko (2018), organizations need to diagnose the business environment during disordered situations. They need to identify the level of disorder in their business activities constantly. This is important as the various levels of turmoil require organizations to have different strategies to cope with them. By identifying the level of disorder

and diagnosing customer needs and desires, organizations can turn crises into new business opportunities (Brem et al., 2020). Moreover, organizations can quickly take innovative actions, respond to unforeseen situations, and willingly accept certain risks. If they avoid taking any chances, they may be pushed out of the market.

This study's novelty lies in the development of a scale of socio-economic and technological new normal activities in supply chain management networks, based on the perspective of top and middle-level management. Discussion on empirical analysis revolves around the guidelines to service industry managers and top management to improve shortcomings in combating the challenges they face in their operations. The management of the organizations needs to develop enough market knowledge, human resources, and technology to meet the challenges and make effective business decisions by taking various approaches that should be based on the dimensions of contingency theory (Kumar et al., 2021). Moreover, the COVID-19 crisis provides prominent lessons to world leaders, businesses, economists, policymakers, and academic researchers about the effects of global change. The results of this study will provide strategic insights to practitioners and policy insights to policymakers to design the strategic responses to combat the challenges in a supply chain that appeared amid COVID-19 in the services sector. The measurements from the scale of this research may produce primary data to give policy suggestions for accelerating new normal activities in the current time. It may be used as the theoretical resource for policymaking by understanding the social, economic, and technological new normal aspects of COVID-19. It could also assist researchers and scholars in identifying multi-dimensional new normal constructs amid the current pandemic in an integrated and comprehensive manner. The socio-economic and technological new-normal scale should be of interest for researchers in exploring factors and implications of prospective new-normal in the post-pandemic era. The scale is found to be a valid and reliable tool to measure socio-economic and technological new-normal activities. Using the developed scale would be easy to quantify the level of new normal activities in many other aspects irrespective of socio-economic and technological sides.

7. Limitations and Future Research Directions

The exploratory nature of this initial work on socio-economic and technological new normal activities must be acknowledged. This study has its limitations as well. Firstly, the scale developed in this study was examined solely in the context of supply chain management of the services sector as the current situation needs unprecedented measures to respond to the challenges of the supply chain management caused by the COVID-19. Hence the role of other industries, including manufacturing, construction, retail, and other industries, becomes more crucial. Therefore, the data from the top management of different sectors could provide more insights. Hence, it opens avenues for future researchers to conduct similar research by taking multiple sectors in emerging economies and other countries in different contexts to deepen the body of knowledge and thoroughly validate the scale from various angles. Secondly, the results obtained in this research are inherently non-generalizable. Only top and middle management of the services industry were included in this research.

Nevertheless, this Pandemic is a global issue that has affected every sector of the worldwide economy. Hence, this research urges future researchers to consider the respondents at different positions in different organizations from various countries as a sample to reduce this study's geographic specificity. Furthermore, the participants were chosen based on their availability and ease of sampling, and future researchers should use a more deliberate sampling method for data collection. Lastly, some other variables such as consumer behavior, technology advancement, or market dynamics could moderate or mediate the effects of the COVID-19 Pandemic on socio-economic and technological new-normal. Hence, future researchers may also wish to investigate this. Despite the acknowledged limitations, the current study provides an essential input regarding new-normal in the post-pandemic era that can support both organizations and researchers who wish to delve deeper into the new-normal activities of the COVID-19.

8. Conclusion

The COVID-19 outbreak has resulted in a historical change in our society's customs and interactions. It also directly impacted the services sector, affecting its supply chain and management network. As being affected by the profound socio-economic and technological challenges, organizations are also trying to adjust to the new normal about operating efficiently. Hence, this study was mainly conducted to develop and validate the measurement scale of the pertinent new-normal activities in the supply chain network of the services industry. This research followed the scale development and validation procedures guided by Churchill (1979). The proposed scale was constructed by empirically investigating top and middle-level management of the services sector, including companies from the banking, telecom, tourism, and hospitality sectors of UAE. Following a rigorous scale development process, a three-dimensions (Social new normal, economic new normal, and technological new normal) scale was developed. EFA and CFA of the scale were performed and found acceptable convergent and discriminant validity, which demonstrated good model fit. The quantitative investigation of the formulated hypotheses outlined the acceptance of all hypotheses of the study. The results suggest that several activities became the new normal for the services industry due to the current outbreak. Organizations are transforming their operations and strategically responding to economic, social, and technological challenges that appeared amid COVID-19. For instance, organizations are acquiring new technology resources such as artificial intelligence, digital platforms, advanced analytics, big data, etc. Furthermore, institutional changes were also implemented, including restructuring facilities to ensure social distancing and integrating with HR to implement new systems and programs for training and efficiency of workers. These strategic responses and new-normal activities would be beneficial in modifying the organizations' current business setting.

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Appendix A: Dendrogram of the Proposed Items based on Group Interviews

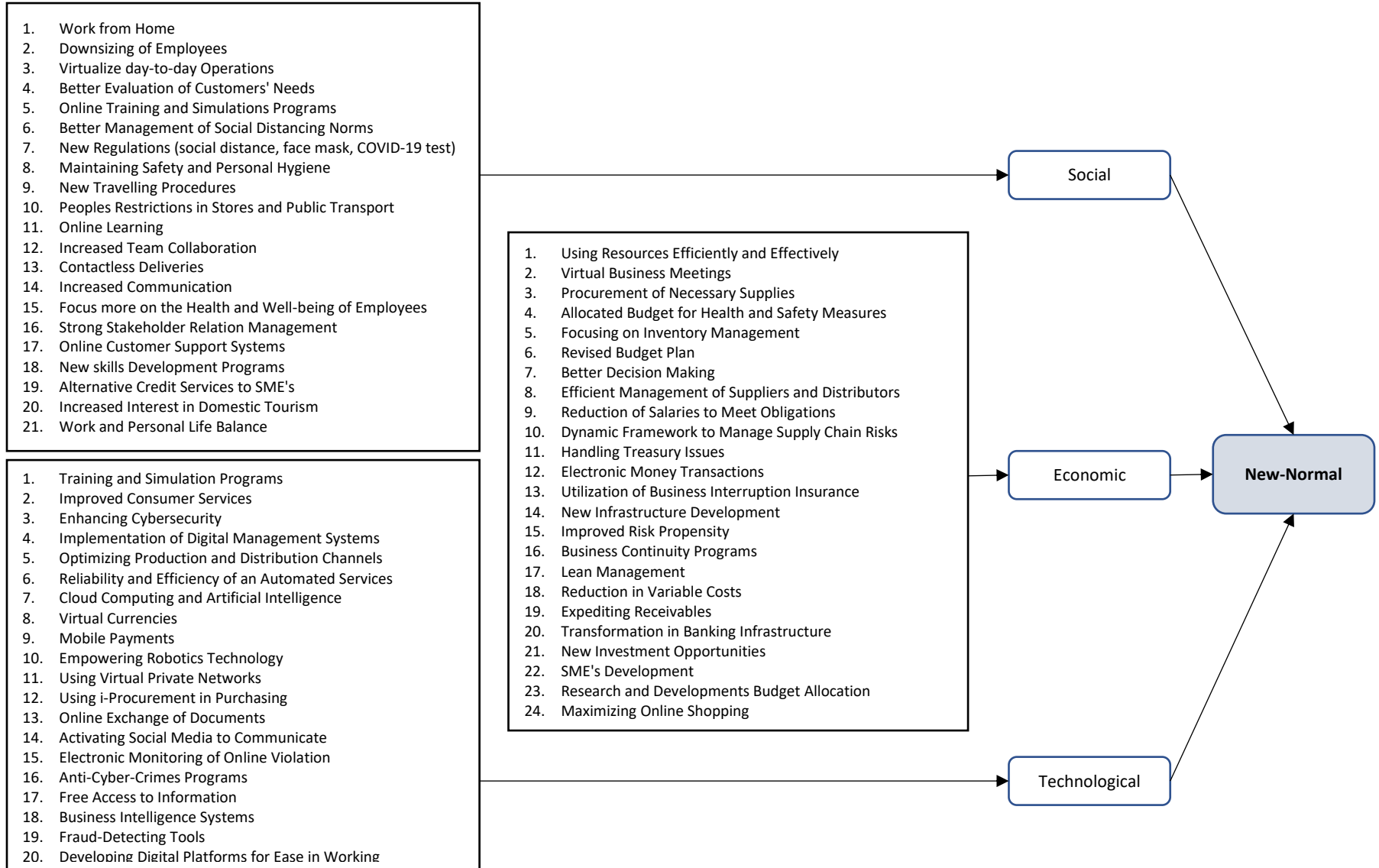


Figure. First Order, Second Order, and Aggregate Themes Obtained through Interviews

Appendix B: Research Instrument

Socio-Economic and Technological New-Normal of Covid-19

The Current (COVID-19) pandemic is unpredictable and evolving quickly, and businesses worldwide are scrambling to manage the impact on people and their economic & Technological systems. The following set of statements relate to your feeling about "Social, Economic & Technological New-Normal". For each statement, please show the extent to which you believe Social, Economic & Technological New-Normal has the feature described by the statement. You may select any of the responses that show how strong your perceptions are. There are no right or wrong answers.

Please select "**one**" response to each of the following questions

A. GENERAL INFORMATION						
1	You are serving in this organization as a part of	Middle Management		Top Management		
2	Total number of employees in your organization	x < 500	500 < x < 1000	x > 1000		
3	Total revenue of the organization in million AED	x < 10	10 < x < 50	x > 50		
4	Ownership of your organization is	Local	Foreign Body	Mixed		
B.	INDICATORS OF SOCIAL NEW-NORMAL	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Work from Home					
2	Downsizing of Employees					
3	Virtualize day-to-day Operations					
4	Better Evaluation of Customers' Needs					
5	Online Training and Simulations Programs					
6	Better Management of Social Distancing Norms					
7	New Regulations (social distance, face mask, COVID-19 test)					
8	Maintaining Safety and Personal Hygiene					
9	New Travelling Procedures					
10	Peoples Restrictions in Stores and Public Transport					
11	Increased Team Collaboration					
12	Contactless Deliveries					
13	Increased Communication					
14	Focus more on the Health and Well-being of Employees					
15	Strong Stakeholder Relation Management					
16	Online Customer Support Systems					
17	New skills Development Programs in the Companies					
18	Alternative Credit Services to SME's					
19	Increased Interest in Domestic Tourism					
20	Work and Personal Life Balance					
C.	INDICATORS OF ECONOMIC NEW-NORMAL					
1	Using Resources Efficiently and Effectively					
2	Virtual Business Meetings					
3	Procurement of Necessary Supplies					
4	Allocated Budget for Health and Safety Measures					
5	Focusing on Inventory Management					
6	Revised Budget Plan					
7	Better Decision Making					
8	Efficient Management of Suppliers and Distributors					
9	Reduction of Salaries to Meet Obligations					
10	Dynamic Framework to Manage Supply Chain Risks					
11	Handling Treasury Issues					
12	Electronic Money Transactions					
13	Utilization of Business Interruption Insurance					
14	New Infrastructure Development					
15	Improved Risk Propensity					

16	Business Continuity Programs					
17	Lean Management					
18	Reduction in Variable Costs					
19	Expediting Receivables					
20	New Investment Opportunities					
D. INDICATORS OF TECHNOLOGICAL NEW-NORMAL						
1	Training and Simulation Programs					
2	Improved Consumer Services					
3	Enhancing Cybersecurity					
4	Implementation of Digital Management Systems					
5	Optimizing Production and Distribution Channels					
6	Reliability and Efficiency of Automated Services					
7	Cloud Computing and Artificial Intelligence					
8	Virtual Currencies					
9	Mobile Payments					
10	Empowering Robotics Technology					
11	Using Virtual Private Networks					
12	Using i-Procurement in Purchasing					
13	Online Exchange of Documents					
14	Activating Social Media to Communicate					
15	Electronic Monitoring of Online Violation					
16	Anti-Cyber-Crimes Programs					
17	Free Access to Information					
18	Business Intelligence Systems					
19	Developing Digital Platforms for Ease in Working					

Your cooperation is highly appreciated. Without your support, this research could not be carried out successfully.