Examining the effects of enterprise social media on operational and social performance during environmental disruption

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Abstract
Building on resource-based, dynamic capabilities and knowledge-based views, we examine how enterprise social media (ESM) usage leads to organisational decision-making effectiveness, and consequently improves organisational (operational and social) performance during environmental disruption. We also investigate the mediating roles of organisational agility, ESM infrastructure and knowledge sharing on the relationship between ESM usage and decision-making effectiveness. To empirically test this model, data was collected through a survey from the employees of public/private emergency and disaster management organisations during COVID-19 pandemic in Bangladesh. The results confirm that ESM usage indirectly affects decision-making effectiveness, which ultimately improves organisations' operational and social performance. Organisational agility and ESM infrastructure are strong mediators of the link between ESM usage and decision-making effectiveness, while the mediating effect of knowledge

sharing through ESM is weaker. In addition to presenting theoretical rationale and empirical evidence, the study enables us to outline policy guidelines for social media managers of disaster management organisations, who must develop ESM strategies in order to boost operational and social performance. This study makes a preliminary attempt to empirically investigate ESM's innovative usage in emergency and disaster management situations.

Keywords: Enterprise social media, Organisational agility, ESM infrastructure, Knowledge sharing, Decision-making effectiveness, Social and operational performance

1 Introduction

While social media was initially used to facilitate individual communication and socialisation, businesses have recognised their effectiveness and importance and are increasingly benefiting from their collaborative and socialising capabilities (Li et al., 2021; Namisango et al., 2019). Enterprise social media (ESM) is a broad term that refers to the use of social media networks by organisations in a variety of ways to achieve various business objectives, such as knowledge exchange and communication (Kirchner et al., 2021; Leonardi et al., 2013). ESM research has attracted significant attention from practitioners and researchers over the last decade owing to the range of advantages it provides to organisations in terms of communication and collaboration (Li et al., 2021; Sharma et al., 2021).

Organisations are now using social media to achieve a range of objectives, including knowledge sharing, relationship building, brand building, raising awareness and gaining customer insights (Kirchner et al., 2021; Pitafi et al., 2018). Social media usage has increased significantly, especially in disaster and emergency situations to connect with others and share information on food, shelter and medical issues (Saroj and Pal, 2020; Sharma et al., 2021). Examples of how social media has helped during disaster situations include the 2010 Haiti earthquake and the 2012 Hurricane Harvey (Reuter et al., 2018; Saroj and Pal, 2020). Similarly, research on operations and supply chain management has established that organisations are increasingly using social media analytics to gather market insights from various external social media channels (Shareef et al., 2020). Thus, there is a consensus on the benefits and significance of both internal and external use of ESM (Kirchner et al., 2021).

Due to the development of contemporary artificial intelligence-based technologies such as big data analytics, the Internet of Things (IoT), and social media, organisations have been compelled to leverage technological advances and equip themselves with dynamic capabilities for emergency circumstances (Ali et al., 2020; Butt et al., 2021; Cai et al., 2018; Kar and Dwivedi, 2020; Ramanathan et al., 2017; Sun et al., 2020; Tønnessen et al., 2021; Wang et al., 2020). Social media, in particular, has emerged as a major innovation in recent years. This has facilitated not just information sharing with external stakeholders, but also the efficient and effective dissemination of knowledge and information inside organisational networks, such as communities of practise (Cui et al., 2019; Neeley and Leonardi, 2018; Shareef et al., 2021; Wamba and Akter, 2019).

Despite a strong realisation of the importance of ESM for disaster management organisations (DMOs), literature reflects limited understanding of the underlying mechanisms through which ESM usage is linked with various types of organisational performance (Reuter et al., 2018). Nevertheless, some researchers argue that organisational performance can be improved by enhanced internal communication, knowledge sharing and collaboration offered by ESM (Cai et al., 2018; Liu and Bakici, 2019). Organisational performance can be gauged from many perspectives, such as financial, operational or market-based (Akhtar et al., 2019; Chowdhury et al., 2019; Reuter et al., 2018). The most critical aspects of disaster management are arguably DMOs' operational and social performance, as these organisations' value depends on their operational efficiency and their social value in the eyes of various stakeholders. However, it is unclear how various organisational processes and ESM infrastructure help build strong relationships between ESM and firms' social and operational performance during emergency situations (Sun et al., 2020). This is particularly important because DMOs must work with multiple stakeholders, such as funding bodies, governments, legislative and policing organisations and the general public. Therefore, this study explores how ESM helps DMOs to perform efficiently in disaster situations, such as the COVID-19 pandemic. To this end, it seeks to determine whether DMOs can take advantage of ESM to enhance their operational and social performance during emergency situations.

Although literature widely acknowledges the importance of dynamic capabilities and IT/knowledge resources for organisational performance, there is limited empirical evidence of their role, particularly with respect to ESM (Kane, 2015; Leonardi, 2017). Dynamic capabilities, such as organisational agility, may help organisations to adapt quickly and respond to environmental changes (Bhattarai et al., 2019; Teece et al., 2016), and firms' resources that are unique and difficult to imitate may confer sustainable competitive advantage (Barney, 1991; Bharadwaj, 2000; Chae et al., 2014). Literature suggests that the organisational dynamic capabilities serve as a significant support for the organisational decision makers in swiftly adapting to the changed environment and aligning organisational resource that matches the changing requirements (Pavlou and El Sawy, 2011). However, empirical evidence is limited and inconclusive to support the argument concerning the role dynamic capabilities play in organisational performance during emergency situations. Moreover, sustaining agility and

dynamic capabilities, which require organisations in a continuous state of transformation, has its own associated costs that may not be easy for every organisation to manage (Teece et al., 2016).

Organisational knowledge-based resources are also critical to the development of dynamic capabilities (Côrte-Real et al., 2017). ESM infrastructure has recently become a key IT asset for any organisation, as it may enable efficient and effective sharing of information and knowledge (Ashrafi et al., 2019; Liu and Bakici, 2019). However, the mechanism through which ESM leverages organisational performance is not thoroughly addressed in the existing, and hence requires further investigation (Cai et al., 2018; Kwahk and Park, 2016; Leonardi et al., 2013; Teece et al., 1997). To address this gap, this study contributes manifold by building on three closely related theoretical perspectives – dynamic capabilities (Teece et al., 1997), the resource-based view (RBV) (Barney, 1991) and the knowledge-based view (KBV) (Nonaka, 1994) – to determine how organisational dynamic capabilities coupled with ESM resources may strengthen the relationship between ESM usage and decision-making effectiveness.

This study makes three key contributions. First, operational and social performance are vital for DMOs and are a consequence mainly of effective decision-making. This study provides empirical evidence of the critical role of ESM in building effective decision-making, and thus enhancing DMOs' organisational performance. Second, drawing on the dynamic capabilities perspective, RBV and KBV, this study provides further explanation of the mechanics through which ESM usage leads to decision-making effectiveness. In particular, it considers whether organisational agility, ESM infrastructure and knowledge sharing reinforce the effect of ESM usage on decision-making effectiveness. Third, from a contextual perspective, the study advances ESM research by investigating its key role for DMOs in emergency situations. It will therefore help DMOs to understand how deploying ESM may help them better manage their relief activities. To sum up, the study attempts to answer the following research questions: (1) *How can disaster management organisations take advantage of enterprise social media to enhance their decision-making effectiveness?* (2) *What is the underlying mechanism that enables disaster management organisations to augment their operational and social performance during emergency situations through ESM?*

The rest of the paper is structured as follows: research background and theoretical perspectives are presented in the next section (Section 2), followed by conceptual model and hypotheses development in Section 3. Next, in Section 4, research methods are discussed, whereas analysis

and results are reported in Section 5. The discussion section (Section 6) then covers theoretical contributions and implications to practice, limitations, and future research directions. Finally, the conclusion section (Section 7) presents the key points emerging from this research.

2 Background

2.1 Emerging technologies in disruptive environments

Recent years have seen the emergence of various new information and communication technologies (ICTs), such as artificial intelligence, big data analytics, the Internet of things (IoT) and social media (Sheng et al., 2020; Sun et al., 2021a). These are particularly useful in disaster and emergency situations (Sun et al., 2020; Wamba et al., 2017). For example, in attempting to contain the recent COVID-19 pandemic, governments have directed organisations to suspend most offline and face-to-face operations. This sped up organisations' digital transformation as they were forced to use various ICTs to minimise disruption to their business. For instance, drones are being used for surveillance and product delivery where human contact has to be restricted or is physically impossible (Banerjee et al., 2021; Dwivedi et al., 2021a).

In all disasters, which usually occur quite suddenly, DMOs play a key role in recovery from potential losses, as well as provide quick and effective assistance to sufferers. However, the COVID-19 pandemic has affected almost every government and organisation, including DMOs themselves (Karami et al., 2021; Koch et al., 2021; Mohamed Ridhwan and Hargreaves, 2021). Therefore, the latter's operations are very likely to be adversely impacted. In the wake of COVID-19, an appropriate technology should allow DMOs to gather information from both internally and externally. In this regard, ESM are an excellent resource now widely used by organisations, both internally among employees and externally with partners, customers and government. Similarly, social networking sites (SNSs), such as Facebook, Twitter and Instagram, have large user databases, providing excellent platforms that enable organisations to connect with the public (Bhatti et al., 2020; Shareef et al., 2019; Singh et al., 2020). Through shared platforms, public social media allow two-way communications thus enabling DMOs to communicate with public in disaster or crisis situations.(Yan and Pedraza-Martinez, 2019). However, external (i.e., public-focused) social media alone are insufficient; rather, a combination of both external data from social media websites and internal operational data may maximise organisational benefits. Although Internet-based information, such as social media users' feedback and information, is very

important for decision-making, official sources of information remain more influential, especially in relation to medical-related information (Yan et al., 2019).

2.2 Enterprise social media

Leonardi et al. (2013) explain that ESM are used in two main ways. First, organisations use these channels to communicate with external players, including customers, vendors, and the general public. Organisations using social media for external communications seek to ensure a presence on multiple platforms, such as widely used SNSs. Second, organisations also use social media to facilitate social interaction and communication among internal stakeholders. According to Leonardi et al. (2013), ESM are defined as web-based platforms that allow organisational workers to communicate with their colleagues or broadcast messages; implicitly or explicitly to identify co-workers for communication; to publish, edit or sort textual data and files associated with particular individuals; and to access any form of data posted, edited or sorted by anyone in the organisation at any time.

Unlike individual use of social media, which relies mainly on public social media such as Facebook and Twitter, ESM usage may include both internal and external usage through public (e.g. Facebook, Twitter) and private (e.g. wikis, blogs, Yammer) social media (Leonardi et al., 2013; Rakshit et al., 2021). The flexibility and reach of social media networks have encouraged organisations to use it for information sharing and dissemination, both with internal and external stakeholders. Unlike public social media, organisations' internal social media networks are aimed mainly at utilitarian benefits, such as internal knowledge sharing, rather than the hedonic benefits provided by public SNSs (Bhatti et al., 2020; Dwivedi et al., 2021b; Kirchner et al., 2021; Kwahk and Park, 2016). Due to the increasing public interest in social media, it has become an effective alternative channel for DMOs to interact and engage with the public. Particularly, DMOs in emergency situations are benefitting from social media features such as virality, engagement, and utilisation to disseminate information efficiently to large population (Kankanamge et al., 2020). However, in this context, the research on use of ESM in DMOs is rather understudied particularly from an empirical perspective.

2.3 Theoretical perspectives

The main theoretical underpinning of this study is the strategic management and information processing literature, which presents diverse theoretical perspectives on links between ESM and

organisational performance (Chen et al., 2020; Neeley and Leonardi, 2018). Owing to the complex and dynamic nature of social media, no single theoretical perspective can completely gauge social media usage behaviour and its important underlying mechanisms. Therefore, in assessing the links and mechanisms through which ESM usage results in enhanced organisational performance, this study integrates three closely related organisational theory perspectives: dynamic capabilities (Teece et al., 1997), RBV (Barney, 1991) and KBV (Nonaka, 1994). The next section details these theoretical perspectives in the context of this study.

2.3.1 Dynamic capabilities

Dynamic capabilities refer to "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997, p.516). The dynamic capabilities view presents a forward-looking perspective on enterprises (Bhattarai et al., 2019). Organisations with dynamic capabilities are expected to be equipped with the necessary resources and capabilities to respond to and exploit environmental opportunities to achieve long-term performance (Teece et al., 1997). One such capability is organisational agility (Teece et al., 2016). Organisations better equipped with agile and dynamic capabilities are generally expected to survive catastrophes and perform better owing to their ability to adapt quickly to new and extraordinary situations.

Dynamic capabilities enable an organisation to detect and react effectively and efficiently to disruptive environmental changes. Additionally, organisations with dynamic capabilities are expected to have the resources and skills required to react to and capitalise on environmental opportunities to achieve long-term success (Teece et al., 1997). Organizational agility is one such dynamic skill that allows organisations to detect and react to external changes (Felipe et al., 2016). Generally, organisations that are more agile and dynamic are anticipated to survive and perform better during disasters, owing to their capacity to rapidly adjust to new exceptional circumstances.

Moreover, to take maximum advantage of modern digital technologies, organisations must be agile and must develop strategies that foster digital transformation (Mikalef et al., 2019; Wamba et al., 2017). Such capabilities may also help them to adapt to changing environments and conduct disaster management. Agile organisations will take advantage of technology-based environmental opportunities and capitalise on internal resources and capabilities to prepare themselves to respond effectively to any environmental disruption. Teece et al. (2016) argue that robust dynamic capabilities are needed to develop organisational agility, which is critical for dealing with uncertain

situations. However, empirical evidence on the role played by dynamic capabilities in organisational performance during emergency situations is limited and inconclusive.

2.3.2 Resource-based view

In the strategic management literature, the RBV is a leading framework for assessing the effects of a firm's IT resources on its performance (Bharadwaj, 2000). This view treats firms' resources as unique assets that are difficult to imitate (Barney, 1991; Teece et al., 1997). The RBV suggests that firms' performance and sustainable competitive advantage are contingent on productive use of critical resources (Barney, 1991). Historical evidence suggests that the major difference between successful organisations and their less successful counterparts is effective and efficient use of IT resources (Bharadwaj, 2000). However, larger IT investments alone may not provide the intended results unless complemented by appropriate organisational capabilities. This is understandable, as IT investments are subject to replication by competitors, so may not provide sustainable advantage on their own. Therefore, organisations must develop unique IT resources that are difficult to imitate (Teece et al., 1997). In this study, ESM infrastructure is examined as a critical organisational resource that may contribute to translating ESM usage into productive outcomes, such as better coordination.

2.3.3 Knowledge-based view

With origins in the RBV, the KBV argues that knowledge-based products and services are major sources of competitive advantage for organisations (Nonaka, 1994). Organisational knowledge-based resources are unique, inimitable and difficult to replicate, and provide a foundation for the development of dynamic capabilities (Côrte-Real et al., 2017; Mikalef et al., 2019). In the last decade, broadband Internet facilities and collaborative web features have further enhanced the capability of social media and allowed organisations to connect effectively with employees, customers and other stakeholders. Unique collaborative features of social media allow easy dissemination of information to large numbers of users and facilitate knowledge sharing with co-workers (Kwahk and Park, 2016). The literature indicates that enterprise social media allows workers to share job-related information and expertise with their peers, thus contributing to the growth of organisational knowledge exchange (Tønnessen et al., 2021; Yee et al., 2021). Such features are especially useful in emergency situations, where organisations may need to reach larger populations more quickly. In such situations, social media may provide various services that

facilitate DMOs' operations, such as rapid dissemination of information, online communications, collaboration among teams and location-based services (Yan and Pedraza-Martinez, 2019).

Based on the above theoretical reasoning, the dynamic capabilities perspective, along with the RBV and KBV, are appropriate choices for this study, providing a strong theoretical underpinning. The next section discusses links between the various theoretical constructs presented in the conceptual model that explain organisations' operational and social performance as a result of ESM usage in emergency situations.

3 Conceptual model and hypotheses development

Building on organisational dynamic capabilities, RBV and KBV, the conceptual model integrates organisational agility, ESM infrastructure and knowledge sharing as mediators of the relationship between ESM usage and decision-making effectiveness (See Figure 1). The underlying links between various latent constructs in the conceptual model and corresponding hypotheses are discussed in the next section.

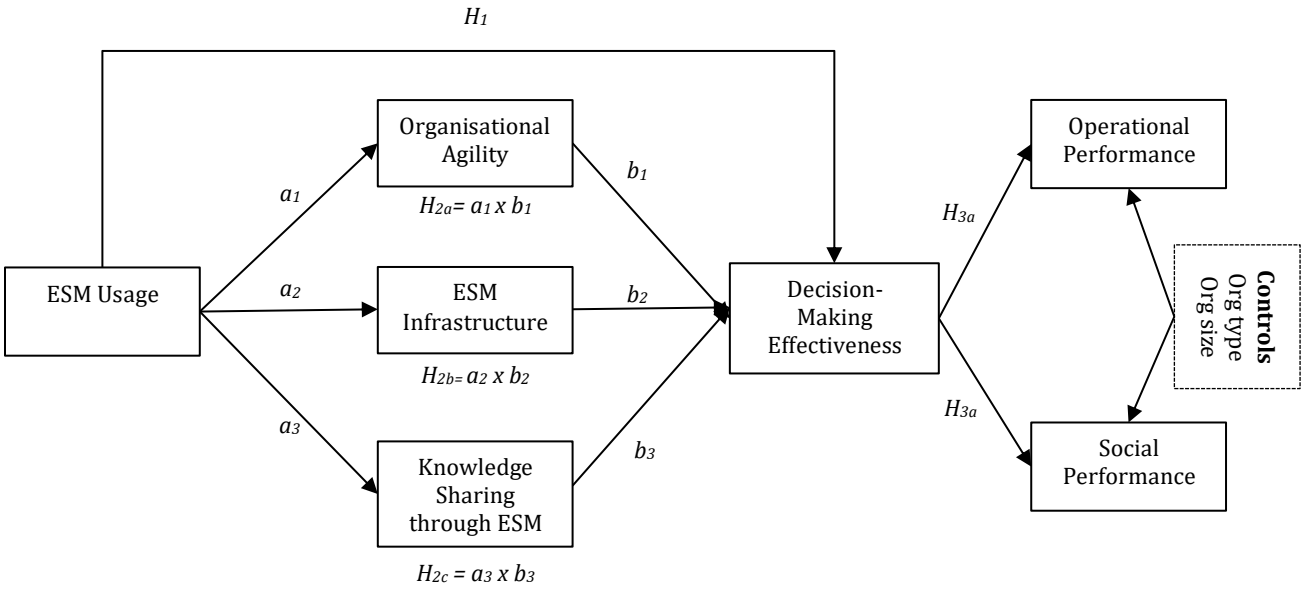

Figure 1. Proposed research model (Source: Adapted from Barney, 1991; Nonaka, 1994)

3.1 ESM usage and organisational decision-making effectiveness

Recent trends in both social media and big data have enabled organisations to utilise large amounts of data generated through social media platforms, hence combining two initiatives (Sheng et al., 2020) that efficiently capture and extract knowledge from social media user-generated content regarding the organisation itself and other market-related information (Wamba and Carter, 2014).

ESM provide organisations with the ability to share knowledge and are increasingly used for external communications with customers, as well as internally for collaboration, talent management, knowledge management and operations (Kane, 2015; Sun et al., 2021b). ESM improve collaboration in knowledge sharing and decision-making processes within organisations (Kwahk and Park, 2016).

Moreover, studies on ESM widely acknowledge their importance for developing collaborative environments in which users can participate and provide feedback on public initiatives, hence contributing to improving decision-making and public services. Archer-Brown and Kietzmann (2018) emphasise that the robust nature and collaboration offered by ESM allow efficient organisational decision-making. decision-making. Acceptance and adoption of social media have also been extensively explored, but research on the impact of ESM effects on decision-making effectiveness and organisational performance remains limited (Sun et al., 2020). We, therefore, suggest that DMOs may take advantage of real-time ESM data for better decision-making, leading to the following hypothesis:

H1. ESM usage by disaster management organisations in catastrophic situations positively influences organisational decision-making effectiveness.

3.2 Mediation: organisational agility, ESM infrastructure and knowledge sharing

To fully understand how ESM use contributes to organisational decision-making effectiveness, it is necessary to analyse not only its direct impact, but also various confounding factors (Liu and Bakici, 2019; Shamim et al., 2019). Organisational decision-making effectiveness may not be a function solely of ESM usage; rather, other factors may influence it directly or indirectly, and ultimately affect organisational performance (Liu and Bakici, 2019; Sun et al., 2020). Other factors, such as organisational dynamic capabilities, ESM resources and knowledge management capabilities may enhance organisations' ability to take advantage of social media usage (Cai et al., 2018; Leonardi, 2017; Leonardi et al., 2013). In particular, organisational agility, ESM infrastructure and knowledge sharing capabilities may play significant roles in strengthening the relation between ESM usage and organisational decision-making effectiveness. However, in the extant literature, there is little empirical evidence of the mediating role of these variables on this relation.

Anecdotal evidence suggests that organisations with dynamic capabilities such as agility are likely to exhibit better performance than those without them (Chen et al., 2014; Côrte-Real et al., 2019). Similarly, literature suggests that organisational agility, in terms of a firm's ability to implement and leverage IT resources, may support various business functions and contribute indirectly to firm performance (Teece et al., 1997). Bharadwaj (2000) argues that an organisation's agility depends on its ability to leverage various IT resources. Moreover, organisational agility may impact on various internal processes and business functions, and may enable organisations to use social media efficiently and leverage its full potential to enhance decision-making (Mikalef et al., 2019).

Chen et al.'s (2014) study conducted in China indicate that business process agility fully mediates the relation between IT capability and organisational performance. Côrte-real et al. (2017) suggest that agility partially mediates the relation between knowledge assets and performance. Similarly, Liu et al. (2013) investigated absorptive capacity and supply chain agility as a mediator of the relation between IT capabilities and firm performance. Their results confirm the fully mediating effect of supply chain agility on the relation between IT capabilities and firm performance. These examples suggest that organisational dynamic capabilities such as agility may play a significant role in IT capabilities such as ESM, and in organisational performance, which is an outcome of effective decision-making. Therefore, it is expected that higher levels of organisational agility may support ESM usage and decision-making effectiveness:

H2a. Organisational agility mediates the relationship between ESM usage and organisational decision-making effectiveness.

According to the RBV, businesses' success and long-term competitive advantage are dependent on the efficient utilisation of essential resources (Barney, 1991; Bharadwaj, 2000). The second important construct that was considered as a potential mediator of the relationship between ESM usage and organisational decision-making effectiveness is ESM infrastructure. This may be considered as part of the larger organisational IT infrastructure, consisting of various IT-related components, including all the hardware, software, networks and data storage facilities required for the smooth development and use of social media tools. Organisational deployment of ESM infrastructure is also crucial for supporting social media usage and developing a collaborative environment in which employees can participate in communities of practice and share their knowledge with co-workers and collaborators (Aboelmaged, 2018; Liu and Bakici, 2019).

Although organisations may rely to some extent on public and external social networks, in order to fully control organisational communications and data, they must develop their own in-house ESM infrastructure (Leonardi et al., 2013; Yan and Pedraza-Martinez, 2019).

ESM can be used for a variety of objectives, such as crowdsourcing, communication, collaboration and information sharing (Kane, 2015; Neeley and Leonardi, 2018). ESM usage thus results in the generation of huge amounts of data, so organisations must have adequate infrastructure to help manage, process and store these data. Akter and Wamba (2019) argue that data analytic tools with the ability to analyse and visualise large volumes of data may radically change and restructure disaster management operations. Therefore, appropriate ESM infrastructure, together with data analytics, may also be useful for handling disasters and emergency situations more efficiently. Furthermore, to leverage the full potential of social media (Candi et al., 2018), ESM infrastructure should be able to support the processing and analysis of the large amounts of data ensuing from their use. Organisations may also use data analytic capabilities to organise and analyse data critical to informed decisions. Therefore, ESM infrastructure is crucial for strengthening the relationship between ESM usage and decision-making effectiveness, leading to the following hypothesis:

H2b. ESM infrastructure mediates the relationship between ESM usage and organisational decision-making effectiveness.

Finally, organisational knowledge-sharing capabilities have been investigated as a potential mediator of the relationship between ESM usage and organisational decision-making effectiveness. Organisational knowledge sharing refers to activities that enable the dissemination of knowledge resources among various stakeholders within and outside the organisation. The literature suggests associations in the use of social technologies such as ESM and knowledge sharing (Sun et al., 2020). Ghasemaghaei (2019) argues that organisational knowledge works as a raw material for effective decision-making. However, it is unclear how organisational knowledge-sharing capabilities may support social media usage, and vice versa.

The KBV stresses the importance of organisational knowledge resources for achieving competitive advantage (Nonaka, 1994), and argues that inimitable and unique resources may have long-lasting impacts on organisational performance and competitive advantage (Aboelmaged, 2018; Cui et al., 2019; Leonardi, 2017). There is general agreement in the literature on the value of knowledge sharing, which suggests that organisational knowledge resources are critical for

improved and better informed decision-making (Cui et al., 2019). Ghasemaghaei (2019) argues that the availability of sufficient and relevant knowledge to decision makers may considerably improve the quality of their decisions. Moreover, Côrte-real et al. (2017) suggest that organisational knowledge sharing helps employees to be better informed and encourages them to share their knowledge with co-workers. Access to sufficient and timely information and knowledge may enable organisations to identify opportunities and threats at an early stage and develop strategies to respond swiftly to environmental changes and emergency situations. This highlights the importance of ESM tools, which may be an efficient medium for organisational knowledge sharing. Such tools may facilitate the transfer of organisational knowledge amongst stakeholders and create a knowledge-sharing environment (Neeley and Leonardi, 2018).

Previous studies have examined organisational knowledge management as a mediator of the relation between IT usage and decision-making effectiveness. For example, Ghasemaghaei (2019) studied organisational knowledge sharing as a mediator between use of data analytics and decision-making quality. Their findings indicate a full mediation effect of knowledge sharing in this relation. Neeley and Leonardi (2018) argue that social media may stimulate knowledge sharing by enabling social lubrication and helping to build trust among community members. Moreover, the results of their longitudinal study of two large firms indicate that social media usage encourages knowledge sharing. Based on above arguments, it is argued that knowledge sharing mediates the effect of ESM usage on decision-making-effectiveness, leading to the following hypothesis:

H2c. Organisational knowledge sharing mediates the relationship between ESM usage and organisational decision-making effectiveness.

3.3 Decision-making effectiveness and organisational performance

Organisational performance requires the achievement of objectives, making it vital for organisations to establish measures to gauge performance. For DMOs, both operational and social performance are very important. As a consequence of recent local and international disasters, humanitarian operations management has emerged as a specialist discipline (Dwivedi et al., 2018; Gunasekaran et al., 2018; Larson and Foropon, 2018). Disaster management firms must strive to achieve better performance in operations required for dealing with disaster and emergency situations and providing relief to sufferers.

A firm's operational performance refers to its ability to meet customer requirements, in terms of time, quality, delivery and flexibility (Chowdhury et al., 2019). Organisations aim for effective and efficient flows of products and services to maximise value for customers, while maintaining low cost and fast delivery. Dubey et al. (2019) establish that data from social sources, such as ESM, assist organisations in complex decision-making and enhance their operational performance. Similarly, Wamba et al. (2017) suggest that data generated from multiple sources, such as big data, are now considered to be a major differentiator between low- and high-performing firms, allowing data-driven decision-making and enabling new ways for organisations to learn and improve their operational efficiency. Other studies also establish a strong relationship between data-driven decision-making and improved operational performance. During the COVID-19 pandemic, a huge amount of data was generated at both global and local levels. DMOs were able to use these data from multiple stakeholders to their advantage, enhancing their operational performance through data-driven decision-making. Hence, the above discussion leads to the following hypothesis:

H3a. Organisational decision-making effectiveness positively influences operational performance.

DMOs, in particular, are more interested in social impact than profitability (Larson and Foropon, 2018). Since they must work with diverse actors, including donors, beneficiaries, suppliers and government agencies, their public and social performance are vital to long-term sustainability. Gunessee et al.'s (2018) study of the role of social media during disaster relief operations reveals that ESM help organisations in decentralised decision-making, and hence improve their social performance within a community. This is because local individuals and firms are more aware of local areas and are more likely to provide key information in such situations. This was particularly relevant during the COVID-19 pandemic, when local communities reported any rises in local cases and used social media to keep everyone informed of developments. Disaster management firms using ESM receive better community-centric information not readily available to centralised agencies (Gunessee et al., 2018). Therefore, their decisions are crucial for social performance, since this will affect the many stakeholders on whom they rely in the longer term. Hence, the following hypothesis is proposed:

H3b. Organisational decision-making effectiveness positively influences social performance.

4 Research methodology

4.1 Contextual background and sample

Originating initially in Wuhan, China in late 2019, COVID-19 virus quickly engulfed the entire world in one of the greatest humanitarian crises ever faced. Owing to the rapid global spread of this new coronavirus disease, in March 2020 the World Health Organization (WHO) was forced to declare COVID-19 a global pandemic. By October 2021, over 240 million cases had been reported globally, with around 4.9 million deaths (Worldometer, 2021). Bangladesh is no exception in having been significantly affected by COVID-19. Over 1.5 million confirmed cases of COVID-19 and more than twenty-seven thousand deaths had been reported in the country by October 2021. With the spread of the virus, various public- and private-sector organisations in Bangladesh were making effective use of social media to communicate and share the latest information with the public. Therefore, in view of our study's objectives, we targeted public- and private-sector organisations in Bangladesh that had been using ESM during the disaster and emergency of COVID-19. A survey was used to collect data from employees of these organisations working at both managerial and operational levels. All respondents used ESM services for various work-related activities.

Data collection was carried out during the COVID-19 pandemic for a period of two months, from July to August 2020. Various local and international organisations and non-governmental organisations (NGOs) participated in the humanitarian supply chain during the disaster, under the umbrella of the Bangladesh government's Department of Disaster Management. A list of participating organisations was collected from this department, and respondents were contacted through their managers. To protect the safety and wellbeing of the respondents and maintain variability in data collection, as well as to minimise common method variance (CMV), the respondents were offered a choice of completing the questionnaire either on paper or online. Of the 280 questionnaires distributed, 203 completed the questionnaire and returned. Five were excluded from the analysis owing to their low quality or incomplete responses, resulting in a final sample consisting of 198 valid responses used for data analysis (Table 1).

Table 1. Sample characteristics

Respondents' profile characteristics	Items	Frequency	Percentage
Gender	Male	124	62.6
	Female	74	37.4
Age (in years)	< 21	9	4.5
	21–30	133	67.2

	31–40	28	14.1
	41–50	17	8.6
	> 50	11	5.6
Education	Undergraduate	52	26.3
	Graduate or above	146	73.7
Organisation type	Public sector	37	18.7
	Private sector	161	81.3
Job type	Operational Staff	86	43.4
	Middle Managerial	86	43.4
	Higher Management	26	13.1
Organisation size	< 50	48	24.2
	50–250	38	19.2
	251–500	31	15.7
	> 500	81	40.9
Organisation age (in years)	< 6	46	23.2
	6–10	31	15.7
	11–15	29	14.6
	> 15	92	46.5

[Note: Sample size n=198]

4.2 Survey design and measures

Prior to testing the model, the survey instruments were developed from well-established measures. In line with Dubey et al. (2019), ten experts were engaged, both academic and non-academic, including senior managers of DMOs, to review the survey instrument for content validity. Based on their feedback, minor changes were made to the structure, readability, and face validity. To further assess the reliability of the scale, a pilot-test was conducted on a sample of 25 individuals from the target population. The pilot test results did not show any significant variance to suggest further refinement of the scales. The final instrument consisted of six items adapted from Pitafi et al. (2018) to measure ESM usage, seven items for organisational agility adapted from Ashrafi et al. (2019) and Côrte-Real et al. (2017), and four items used to measure ESM infrastructure adapted from Lin and Lin (2008) and Mao et al. (2016). Knowledge sharing was measured using six items adapted from Cai et al. (2018), social performance was measured using four items based on Bhattarai et al.'s (2019) scale, and six items for operational performance were developed based on scales adapted from Chowdhury et al. (2019), Dubey et al. (2019) and Gupta and George (2016). The items for the latent constructs are listed in the Appendix. All these items were measured using a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The survey instrument also included questions relating to respondents' demographic characteristics, such as gender, age, education, type of organisation, job type, organisation age and organisation size.

4.3 Common method variance and endogeneity

Cross-sectional data on perceptual measures collected from a single source, as in this study, may potentially be subject to CMV (Podsakoff et al., 2003). While it is hard to control fully for CMV, various procedural remedies, particularly in the research design phase, may reduce the *ex-ante* risk (Guide and Ketokivi, 2015). Concerning the procedural measures, we utilised well-established and reliable scales and avoided items that might disclose that a respondent identifies or elicits socially desirable responses. In addition, during the *ex-post* analysis phase we applied various statistical measures (e.g., Harman's single factor test) to assess potential CMV concerns. However, we found no significant abnormality in the data, such as extremely high correlations ($r > 0.90$) or single factors explaining over 50% of variance. Additionally, to assess potential issues of endogeneity (Dubey et al., 2019), we examined if there is any significant change in the R^2 values of the ultimate endogenous variables (i.e., operational and social performance) after adding control variables (i.e., organisation type and organisation size) in the structural model. A very small change is R^2 values of operational and social performance was noted. For operational performance the values R^2 increased from 0.299 to 0.300 (R^2 change =0.001) while for social performance changed from to 0.293 to 0.309 (R^2 change = 0.016). Moreover, the impact of both the control variables on operational and social performance were not significant. Therefore, the data appeared not to suffer from CMV and endogeneity.

5 Results

We employed partial least squares structural equation modelling (PLS-SEM) to analyse the data, as this is less sensitive to sample size than covariance-based SEM approaches (Hair et al., 2017). When the objective is not to create a new theory or construct but to verify or extend existing ones, as was the case in this research, SEM-PLS is preferred technique over covariance-based SEM (Diallo et al., 2018; Hair et al., 2017). We used SmartPLS 3.3 to check the psychometric properties of the scales and to test the hypotheses. The next section explains the psychometric properties of the scales and the model testing.

5.1 Measurement model

Given that all the scales used in this study were adapted from established literature, we used confirmatory factor analysis (CFA) to assess the scales' psychometric properties. Four items were

dropped from the CFA – one for ESM usage, two for organisational agility and one for knowledge sharing through ESM – because their factor loadings were found to be below 0.70. With regard to reliability, all seven latent constructs had Cronbach's Alpha, rho_A and composite reliability measures above 0.70 (see Table 2).

Table 2. Factor loadings and reliability measures

Construct	Items	Loadings	Cronbach's Alpha	rho_A	CR	AVE
ESM usage	SMU1	0.802	0.878	0.898	0.910	0.670
	SMU2	0.830				
	SMU3	0.828				
	SMU4	0.874				
	SMU5	0.753				
Organisational agility	OA1	0.759	0.823	0.838	0.874	0.581
	OA3	0.740				
	OA4	0.794				
	OA5	0.756				
	OA7	0.760				
ESM infrastructure	INF1	0.717	0.784	0.790	0.861	0.608
	INF2	0.776				
	INF3	0.793				
	INF4	0.828				
Knowledge sharing through ESM	KS1	0.855	0.816	0.825	0.879	0.647
	KS2	0.802				
	KS3	0.842				
	KS5	0.710				
Decision making effectiveness	DME1	0.772	0.863	0.864	0.902	0.648
	DME2	0.825				
	DME3	0.836				
	DME4	0.768				
	DME5	0.820				
Operational performance	OP1	0.779	0.852	0.857	0.890	0.574
	OP2	0.764				
	OP3	0.737				
	OP4	0.791				
	OP5	0.749				
	OP6	0.721				
Social performance	SP1	0.860	0.870	0.902	0.910	0.717
	SP2	0.858				
	SP3	0.882				
	SP4	0.783				

[Note: CR = composite reliability, AVE = average variance extracted]

Checks for item- and construct-level reliability revealed the scales to be reliable. This was followed by assessments of the scales' convergent and discriminant validity. For all latent constructs, the average variance extracted (AVE) was above 0.5 (see Table 2), exhibiting convergent validity (Fornell and Larcker, 1981). In addition to Fornell and Larcker's (1981)

criterion, we followed Henseler et al.'s (2015) more recent guidelines for assessing heterotrait–monotrait (HTMT) ratios to verify discriminant validity. Fornell and Larcker (1981) suggest that the AVE value of each construct should be higher than the relevant inter-construct shared variance, whereas Henseler et al. (2015) recommend that HTMT ratios for the underlying constructs should be lower than 0.85. The results indicated that for all latent constructs, the square roots of the AVE values were greater than the corresponding inter-construct correlations. Moreover, the HTMT ratios for all seven constructs were below the recommended value of 0.85, thus establishing discriminant validity (see Table 3).

Table 3. Inter-construct correlations and √AVE values

Construct	1	2	3	4	5	6	7
1. ESM Usage	**0.818**	0.229	0.379	0.561	0.309	0.177	0.317
2. Organisational agility	0.197	**0.762**	0.175	0.313	0.482	0.256	0.349
3. ESM infrastructure	0.333	0.062	**0.780**	0.492	0.437	0.363	0.358
4. Knowledge sharing through ESM	0.495	0.240	0.404	**0.803**	0.452	0.216	0.366
5. Decision-making effectiveness	0.274	0.424	0.365	0.386	**0.805**	0.659	0.628
6. Operational performance	0.135	0.214	0.298	0.184	0.570	**0.757**	0.615
7. Social performance	0.284	0.285	0.306	0.305	0.564	0.528	**0.846**

[Note: Diagonal elements are the square roots of AVE, while values below the diagonal are the inter-construct correlations and those above the diagonal are HTMT ratios]

5.2 Model testing

Having established the reliability and validity of the scales, the structural model served to test the hypotheses using SmartPLS 3.3. Following Hair et al. (2017), the PLS bootstrap procedure with 5,000 samples was used to estimate the statistical significance of the path coefficients in the structural model. Table 4 summarises the results for the structural model, indicating that ESM usage is significantly related to organisational agility ($\beta = 0.197$, $t = 2.203$), ESM infrastructure ($\beta = 0.333$, $t = 4.067$) and knowledge sharing through ESM ($\beta = 0.495$, $t = 7.993$), while organisational agility ($\beta = 0.359$, $t = 5.310$), ESM infrastructure ($\beta = 3.125$, $t = 4.067$) and knowledge sharing through ESM ($\beta = 0.181$, $t = 2.086$) significantly affect decision-making effectiveness. However, the direct effect of ESM usage on decision-making effectiveness is not significant ($\beta = 0.028$, $t = 0.329$). This implies that the relationship between ESM usage and decision-making effectiveness is fully mediated by organisational agility, ESM infrastructure and knowledge sharing through ESM. In addition, the direct effects of decision-making effectiveness on operational performance ($\beta = 0.571$, $t = 10.088$) and social performance ($\beta = 0.574$, $t = 8.341$)

are significant. None of the control variables are significantly related to operational or social performance.

Table 4. Structural model results

Relationship	Path Coefficients	Std Dev	T-Values	P-Values
ESM usage → Organisational agility	0.197	0.089	2.203	0.028
ESM usage → ESM infrastructure	0.333	0.082	4.067	0.000
ESM usage → Knowledge sharing through ESM	0.495	0.062	7.993	0.000
ESM usage → Decision-making effectiveness	0.028	0.084	0.329	0.742
Organisational agility → Decision-making effectiveness	0.359	0.068	5.310	0.000
ESM infrastructure → Decision-making effectiveness	0.260	0.083	3.125	0.002
Knowledge sharing through ESM → Decision-making effectiveness	0.181	0.087	2.086	0.037
Decision-making effectiveness → Operational performance	0.571	0.057	10.088	0.000
Decision-making effectiveness → Social performance	0.574	0.069	8.341	0.000
Organisation type → Operational performance	0.010	0.052	0.184	0.854
Organisation type → Social performance	-0.085	0.047	1.782	0.075
Organisation size → Operational performance	0.044	0.063	0.706	0.480
Organisation size → Social performance	-0.088	0.057	1.546	0.122

To further explore the role of each mediating variable, we assessed the specific indirect effects of ESM usage on decision-making effectiveness. The indirect effects of organisational agility and ESM infrastructure are significant at $p < 0.05$; however, the indirect effects of knowledge sharing through ESM are not significant at the same level, although the p-value is marginally higher than 0.05. Thus, we conclude that organisational agility and ESM infrastructure strongly mediate the relationship between ESM usage and decision-making effectiveness, while the mediating effect of knowledge sharing through ESM is weaker (Table 5).

Table 5. Structural model results

Relationship	Path Coefficients	Std Dev	T-Values	P-Values
Specific indirect effects				
ESM usage → Organisational agility → Decision-making effectiveness	0.071	0.035	2.026	0.043
ESM usage → ESM infrastructure → Decision-making effectiveness	0.087	0.037	2.347	0.019
ESM usage → Knowledge sharing through ESM → Decision-making effectiveness	0.090	0.047	1.902	0.057
Total effects				
ESM usage → Decision-making effectiveness	0.247	0.071	3.496	0.001
ESM usage → Operational performance	0.157	0.054	2.919	0.004

ESM usage → Social performance	0.157	0.060	2.620	0.009

6 Discussion

Although organisations globally are increasingly using ESM to manage both internal operations such as knowledge management and collaboration, and external operations such as marketing and customer relationship management (Leonardi et al., 2013), the effectiveness of ESM for disaster management operations remains relatively under-explored. The findings of this research allow us the opportunity to discuss the various aspects related to ESM and organizational performance. The results of this study indicate that, as hypothesised, DMOs' use of ESM in catastrophic situations positively affects their decision-making effectiveness. The results reinforce the findings of earlier studies. For example, Wamba et al.'s (2019) longitudinal case study reveals that DMOs use ESM for decision-making in various phases of emergency situations, including prevention and mitigation, preparedness, response and recovery. Since these phases are part of DMOs' everyday operations, ESM are found to be helpful in enabling information dissemination, connectivity and collaboration.

Our results indicate that the relationship between ESM usage and organisational decision-making effectiveness is contingent on organisational agility, ESM infrastructure and organisational knowledge sharing. The direct effect of ESM usage on organisational decision-making effectiveness is not significant ($p < 0.05$). However, the indirect effects and the total effect of ESM usage on organisational decision-making effectiveness are significant ($p < 0.05$). A possible interpretation of this is that the effect of ESM usage on organisational decision-making effectiveness is fully mediated by organisational agility, ESM infrastructure and organisational knowledge sharing. The specific indirect effects suggest that the intervening effects of organisational agility and ESM infrastructure are both significant ($p < 0.05$); however, the specific indirect effect of ESM usage on decision-making effectiveness through organisational knowledge sharing is not significant at $p < 0.05$ but is significant at $p < 0.1$. This suggests that although organisational knowledge sharing affects the relationship between ESM usage and decision-making effectiveness, its impact is weaker than that of organisational agility and ESM infrastructure. These findings relating to the mediating role of organisational agility, ESM infrastructure and organisational knowledge sharing are broadly consistent with previous research

(Akter and Wamba, 2019; Chen et al., 2014; Côrte-Real et al., 2017; Ghasemaghaei, 2019; Liu et al., 2013; Neeley and Leonardi, 2018; Wamba et al., 2019).

The results also indicate that organisations' operational and social performance are positively affected by their effective decision-making. In the context of DMOs, organisational decision-making requires quick responses and real-time decisions that are results-oriented, aimed at relieving or improving disastrous situations. We find that organisations with effective decision-making processes are perceived as having high operational and social performance. In previous OM research, effective organisational decision-making using ESM has been found to improve operational performance (Akhtar et al., 2019). Our results confirm these findings and suggest that DMOs can make use of ESM for effective decision-making to improve their disaster relief operations. While most previous research on DMOs' social media use has focused on external social media (Yan and Pedraza-Martinez, 2019), in this study we consider internal use by employees.

Extant research pays considerable attention to social performance in the context of social responsibility, focusing on the impacts and outcomes for society (Cumiskey et al., 2015), whereas the social performance of DMOs, which may be of huge benefit to society, remains under-explored. Since disaster relief organisations work with various stakeholders, including government, donors and suppliers, good social performance may help guarantee continued collaboration. Effective decision-making using ESM, which enables quick response times, information dissemination, preparedness and mitigation, leads to better social performance. Galindo and Batta (2013) stress that since disaster relief organisations are involved in social and political actions, depiction of social performance is necessary to present effective responses. Although no previous study has focused on improved social performance through ESM, our results are in line with Cumiskey et al.'s (2015) finding that social performance increased the use of mobile services for communities prone to flash flooding in Bangladesh. Wong et al. (2011) also find that organisations with decentralised decision-making processes exhibit better social performance than those adopting a centralised decision-making approach. The social and collaborative nature of ESM enables decentralised decision-making; therefore, our results present a new dimension on decision-making research, while also strengthening existing theory.

As a result of the dramatic increase in Internet usage in general, and social media in particular, organisations can take advantage of the global reach of social media to quickly disseminate

information and effortlessly send alerts to large numbers of people. The literature also points to this change, and suggests that in the coming decades, social media will transform organisational communications and operations (Leonardi, 2017). Therefore, it is critical to gain a solid understanding of contemporary social interaction technologies and to employ them appropriately to enable collaborative environments.

6.1 Theoretical contributions

Although some previous research has investigated ESM usage (Cai et al., 2018; Liu and Bakici, 2019), this study is one of the first to investigate the relationship between ESM usage and organisational performance. The significance of ESM usage is well documented (Liu and Bakici, 2019), but supporting theoretical and empirical evidence to explain how this is translated into enhanced performance is somewhat lacking. To address this issue, this study draws on three interrelated theoretical perspectives – dynamic capabilities (Teece et al., 1997), RBV (Barney, 1991) and KBV (Nonaka, 1994) – since no single theory can completely explain the complex underlying theoretical mechanism through which ESM usage results in enhanced organisational performance. This integrated theoretical underpinning provides a solid foundation for the development of a strong conceptual explanation of ESM usage and its consequences for organisational performance.

While organisational agility, ESM infrastructure and knowledge sharing have been studied in various contexts (e.g., Ashrafi et al., 2019; Chen et al., 2014; Kwahk and Park, 2016), their intervening roles in the context of ESM have not previously been investigated. This study is one of the first to empirically establish their mediating role on the relationship between ESM usage and decision-making effectiveness, explaining the underlying mechanism through which social media usage may improve operational and social performance. The full mediation effects of organisational agility, ESM infrastructure and knowledge sharing highlight these variables' critical role in facilitating effective decision-making.

Though there has been significant focus on studying the individual-level consequences of ESM use, such as employees' adoption of ESM, or job performance, etc., nevertheless, the organisational impacts of ESM usage remain largely fragmented (Li et al., 2021). Moreover, the empirical research on enterprise social media has been largely conducted from a perspective of technology acceptance or adoption, utilising fundamental theoretical frameworks such as the

technology acceptance model or the unified theory of acceptance and use of technology (Venkatesh et al., 2003). By combining dynamic capabilities, RBV, and KBV theories, this research offered a more pragmatic approach to elucidating the consequences of enterprise social media.

6.2 Implications for practice

This study enables some useful and intriguing recommendations for social media managers of DMOs. Despite the huge popularity and use of social media by the general public, its organisational usage has been limited and restricted mainly to marketing purposes. Our results suggest that ESM usage contributes indirectly to operational and social performance, particularly of DMOs. Therefore, by taking advantage of social media tools, such as their collaborative features, organisational managers can develop strategies and tools to communicate efficiently and effectively with users in disaster and emergency situations.

Enterprise social media usage has the potential to have a significant effect on several business processes, including communication and information sharing procedures, as well as the overall performance of the organisation. Therefore, organisational social media managers must realise the importance of social media usage and develop strategies to take advantage of the power of social media tools to reach and engage with wider audiences. Our results suggest that superior operational and social performance are a function of effective decision-making, which depends on ESM usage through the mediation of organisational agility, ESM infrastructure and organisational knowledge sharing. Therefore, to enhance operational and social performance, social media managers should provide an environment that encourages social media usage to facilitate social interactions.

ESM usage alone may not provide the desired performance outcomes owing to its dependence on other related elements, such as organisational agility, ESM infrastructure and organisational knowledge sharing. Therefore, organisational managers should understand the mechanism through which ESM usage may contribute to improving performance. Specifically, they must be aware of the interdependence between ESM usage, organisational agility, ESM infrastructure, organisational knowledge sharing, decision-making effectiveness and performance.

Moreover, the study demonstrates the importance of enterprise social media in enhancing decision-making effectiveness, which ultimately results in improved operational and social performance. Therefore, companies could use enterprise social media as a strategic tool rather than

just as a social networking platform (Sharma et al., 2021). To optimise operational and social performance, organisations should design and implement social media policies that encourage employees to use ESM. As such, this research has significant implications for organisational decision makers considering the integration of social and collaborative technologies within their organisations.

The recent digital transformation presents opportunities and threats for organisational managers, as users' expectations have also risen rapidly, creating a very competitive operating environment. Organisations that fail to understand the digital landscape and have not adapted to this change are finding it hard to meet their users' expectations and sustain their growth. Organisations are facing the challenge of dealing with unprecedentedly turbulent environments, such as the COVID-19 pandemic. To cope with such emergency situations, organisations must take effective decisions without wasting time, and must quickly share the outcomes with stakeholders. Therefore, it is important for organisations to identify and develop dynamic capabilities that help them to establish organisational processes and resources to better cope with unanticipated demand and environmental disruption.

6.3 Limitations and future research directions

Although this study makes useful contributions to the ESM literature, certain limitations should be borne in mind in interpreting the results. First, while various procedural and statistical measures were taken, a cross-sectional study with self-reported measures such as this may suffer from CMV. Future research might use a longitudinal research design to assess the robustness of the results. Second, owing to the prevailing COVID-19 situation, we managed to collect usable data from only 198 employees of DMOs in Bangladesh. A larger sample from various countries with different levels of social media penetration would be required to test the robustness of the conceptual model. Third, the data used to test the conceptual model relied mainly on perceptual measures. Data on objective measures, such as those obtained through social network analysis, might be used to reinforce the findings of this study. Fourth, in addition to the operational and social dimensions of organisational performance, other aspects may also be important, such as environmental, financial and strategic dimensions. Fifth, caution should be taken in generalising the findings, as the study was conducted in the context of the COVID-19 pandemic, which differs in nature from other natural disasters that tend to be of shorter duration.

7 Conclusion

In this research, we examined ESM usage and its associations with decision-making effectiveness and organisational performance. This study advances current understanding of social media usage in the organisational context by investigating the underlying mechanism through which ESM usage results in better organisational performance. Although the theoretical framework for this study might be extended by incorporating additional constructs, it provides a solid foundation for future research on ESM. Specifically, the study contributes to the ESM literature by exploring how ESM usage leads indirectly to better organisational decision-making effectiveness, and thus to superior operational and social performance. Although previous studies have investigated social media usage in the organisational context, this study is the first to examine the implications of DMOs' ESM usage in catastrophic situations. In summary, the study recommends that organisational managers should support organisational agility, invest in ESM infrastructure, and encourage knowledge sharing to leverage ESM usage benefits to optimise operational and social performance.

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8 Appendix-A: Questionnaire – Latent Constructs

Construct	Sources
ESM Usage	Pitafi et al., (2018)
I regularly use Organisational social media to:	
… contact other people for my work.	
… communicate with colleagues or customers in my daily work.	
… ask questions in my daily work.	
… answer questions in my daily work.	
… share files in my daily work.	
… do work-related socialization in my daily work. *	
Organisational Agility	Ashrafi et al. (2019)
My organisation	Côrte-Real et al. (2017)
… responds to changes in aggregate consumer demand.	
… customizes a product or service to suit an individual customer.*	
… reacts to new product or service launches by competitors.	
… introduces new pricing schedules in response to changes in competitors' prices.	
… expands into new regional or international markets.	
… changes (i.e., expand or reduce) the variety of products/services available for sale.*	
… adopts new technologies to produce better, faster, and cheaper products and services.	
ESM Infrastructure	Lin and Lin (2008)
My organisation has	Mao et al. (2016)
… adequate social media tools and architectures.	
… sufficient network communications, with good availability, connectivity and reliability.	
… the latest organisational IT applications to support social media activities and processes.	
… IT staff who effectively and efficiently coordinate the IT infrastructure and manage its relationship with business units.	
Knowledge Sharing through ESM	Cai et al. (2018)
In my organisation, social media is used to share knowledge:	
… with co-workers	
… with managers	
… with subordinates	
… with customers	
… with suppliers*	
… with outside partners	
Decision-Making Effectiveness	Cao et al. (2015)
We are more effective than our competitors at:	Shamim et al. (2019)
… responding quickly to change	Wang and Byrd (2017)
… making real-time decisions	

… understanding customers	
… making result-oriented decisions	
… improving the quality of decisions	
Social Performance	Bhattarai et al. (2019)
The social performance of my organisation is much better than our competitors at:	
… implementing social strategy (relative to competitors)	
… fulfilling the social mission	
… fulfilling the social objectives	
… creating social value to the stakeholders (e.g., customers, employees, etc.)	
Operational Performance	Chowdhury et al. (2019)
The operational performance of my organisation has exceeded that of our competitors at:	Dubey et al. (2019) Gupta and George (2016)
… product introduction speed	
… product modification speed	
… ability to quickly respond to changes in market demand	
… on-time delivery	
… delivery speed	
… customer service	

**Dropped from the CFA due to low factor loadings.*