

Governance of Digital Communication Networks II: Opportunities and Benefits

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Executive Summary

This Discussion Document identifies benefits attributable to Digital Communication Networks (DCNs). This document continues from the findings of *Governance of DCNs I: Categorisation of Harms* to inform policymaking from an Indian perspective.

1. The document notes that aspects of DCNs such as low entry costs, change in scale and structure of human networks, and the speed of information flows enable harms and benefits. It then proceeds to identify the benefits accrued in two interdependent areas – Markets and Society.
2. Two broad categories of benefits of DCNs are identified in the context of Markets and Society.
3. For Markets, creation of economic opportunities (new ecosystems, benefits for Indian businesses) and economic efficiencies (access to information, social graphs).
4. For Society, the document demonstrates benefits through five types of actions that DCN capabilities and networks enable – information production/consumption, interaction, identity formation/expression, organisation, and financial transactions.
5. Finally, the document enumerates the following reasons for adequate reconsideration and appreciation of benefits enabled by DCNs in India, in the face of impending regulation:
 - a. The greater amount of recent literature documenting harms, while benefits remain under-explored.
 - b. Growing regulatory interest in online harms/safety-based approaches in multiple jurisdictions.
 - c. The need for Indian industry to be competitive in any market-oriented solutions

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1. Introduction

1.1. Background

In the first publication of this series, *Governance of Digital Communication Networks (DCNs) I: Categorisation of Harms*,¹ we defined DCNs as composite entities consisting of:

- **Capability:** Internet-based products/services that enable instantaneous low-cost or free communication across geographic, social, and cultural boundaries. This communication may be private (1:1), limited (1:n, e.g. messaging groups), or broad (Twitter feeds, Facebook pages, YouTube videos, live streaming), and so on.
- **Operator(s):** Firms/groups that design/operate these products and services.
- **Networks:** The entities/groups/individuals that adopt/use these products and services, and their interactions with each other.

The purpose of introducing a new framework is to explore the perspective of the effects of DCNs on societies rather than specific focus on a specific set of firms, technologies, sharing mechanisms, user dynamics, and so on. We classified the harms attributed to DCNs based on whether they had effects in the spheres of competition, data and narrative effects. We also classified these attributed harms as potential market failures, social problems, and cognitive biases. We identified whether these harms were a function of DCNs themselves or existing issues that that the scale of DCNs amplified.²

The existing vocabulary of market failures could define a subset of the harms attributed mainly those with competitive effects and some with data-related effects. Many of the data and narrative harms, however, represent a wide range of social problems which will need to be addressed by a combination policy interventions and new social norms. Our analysis also raised questions of the kind of higher-order effects that attempts to regulate DCNs in a small set of developed economies will have across competition, data, and narrative spheres in the rest of the world.

1.2. DCN Firms in India

As of January 2021, DCNs in India had ~450M users.³ This number represents a significant increase from ~60M⁴ and ~100M⁵ in 2012 and 2014, respectively. Given the tendency of DCN firms to adopt

features from other services⁶, we do not try to categorise them explicitly as feed-based, image-focused, video-consumption-based, and so on. Note that user count discrepancies in the following paragraphs could be a function of relying on third-party data from various data sources used. These numbers should be considered indicative only.

WhatsApp (~530M), YouTube (~450M), Facebook (~410M) and Instagram (~210M) represent the 4 largest DCN services in terms of monthly users.⁷ Twitter, meanwhile, has ~17M users.⁸ With over 200M users, India potentially represents the largest market in terms of users for Telegram.⁹ The short-video segment has a significant user-base too. When TikTok was geo-blocked in 2020, it reportedly had around 170M¹⁰ - 200M¹¹ monthly users. Since then, users have substituted it with Instagram Reels, YouTube Shorts, Snapchat (~100M)¹² and domestic alternatives¹³ such as Moj, MX TakaTak, Roposo, Chingari, with estimates suggesting that together they may have surpassed TikTok's erstwhile user-base.¹⁴

Signal had 20M monthly users in December 2020, just before a sharp increase in downloads in early January after WhatsApp proposed changes to its privacy policy.¹⁵ Sharechat (160M)¹⁶ and Koo (10M)¹⁷ differentiate themselves on the basis of local language support. LinkedIn, which may not have significant narrative effects yet, had ~60M users in December 2019.¹⁸ All of these firms would be considered *significant social media intermediaries* as defined by the 5M monthly user threshold notified by the Ministry of Electronics and Information Technology (MEITY).¹⁹ Clubhouse, which facilitates live-audio rooms, reports having ~2M monthly users²⁰ and plans to support more languages.²¹

The DCN firms do not report average revenues per users (ARPU) for specific countries. Facebook reports ARPU separately for US and Canada, Europe, Asia-Pacific and Rest of World. In Q3 2021, ARPU for US and Canada, Europe are ~13x and ~4x of ARPU for Asia-Pacific respectively.²²

1.3. Identifying Benefits

In this discussion document, we identify benefits that DCNs enable in the Indian context. Certain aspects of DCNs that we previously identified -- such as low entry costs and prevalence of user-generated content²³, changes to the scale and structure of human networks²⁴, the speed of information flows/virality, and so on -- can have benefits or can mitigate harms. For instance, the

role of DCNs was instrumental in facilitating the search for a wide range of resources during the second wave of COVID-19 infections in India.²⁵

Identifying potential benefits of DCNs can inform the trade-offs we will need to make to govern DCNs. Governance frameworks will encompass capabilities, operators, and networks, in ways that minimise harms and maximise benefits. The exercise is not meant to absolve DCN firms of their roles in the attributed harms.

A number of countries are shifting towards stricter regulation of DCNs along with stated intentions to address actual or perceived harms. A comprehensive listing and detailed critique of these efforts are outside the scope of this document. An indicative set of interventions being considered include antitrust reform and competition watchdog-led investigations/inquiries/fines²⁶; intermediary liability reforms²⁷; privacy-focused legislation; anti-disinformation laws^{28 29}; and ‘hostage-taking laws’³⁰.

Some of these interventions can be used against various stakeholders³¹, including those whom they are meant to protect, through misuse or poor execution. Alternatively, some have the potential to consolidate the market positions of the existing set of firms which can operate at scale, thereby swapping either data-related³² or narrative harms³³ for competition harms. Unable to mitigate harms across multiple countries or resist regulatory pressure from authoritarian regimes, some commentators are suggesting that technology firms, including some of those that operate DCNs, should shrink or withdraw from operating in those jurisdictions.^{34 35}

The underlying mechanisms of DCNs in perpetuating harms or enabling benefits are the same. Unless Indian society can articulate the trade-offs required, it risks misdiagnosing and subsequently sub-optimally regulating its own issues or being subject to downstream effects of developments in other countries.

In Section II, we highlight the economic opportunities and efficiencies enabled by DCNs. First, we identify the range of economic opportunities that have been created by DCNs through new ecosystems that they have helped develop. Here, we focus on the benefits of the creator economy and their direct and indirect contribution to creating employment and income generation sources. We further look at the benefits that have accrued to Indian businesses through the medium of operation presented by DCNs, focusing on small and medium enterprises. We also look at the novel advertising ecosystem that supports activities on these DCNs and its benefits.

We categorise economic efficiencies created by DCNs into two. First, opening up access to greater amounts of information. Second, we identify that the online social graph can be an enabler of economic efficiency.

In Section III, we focus on the role that the communication capabilities and networks that are a part of DCNs can play in providing benefits or mitigating harms in society. To do this, we use Trottier and Fuchs' visualisation of modern society, movements (socio-political, socio-economic, socio-cultural) and roles (political, economic, private, socio-political, socio-economic, socio-cultural). Then, building on the tripleC framework, we identify five types of actions that DCNs enable: (a) Information Production/Consumption; (b) Interaction; (c) Identity Formation/Expression; (d) Organisation; and (e) Financial Transactions. Since the benefits cannot be precisely quantified, we use examples to demonstrate them qualitatively.

In conclusion, we observe that collective efforts across civil society, academia and policy makers have been focused on the documentation of harms, especially since 2016. Meanwhile, there have been relatively fewer attempts to recalibrate our understanding of the benefits that DCNs can enable. We also observe that, similar to harms³⁶, further study in the Indian context is urgently required. This understanding needs to inform regulatory interventions that appear to be coalescing around online harms/safety approaches, which can de-link online and physical effects. It will also enable Indian industry and engineering talent to be competitive in any market-oriented solutions, should they come about in the future.

2. DCNs and Markets

DCNs created structural changes to the operation of our economies. Concerns of concentration of these benefits and inequitable outcomes persist³⁷. However, that should not deter an analysis of the benefits they have facilitated for markets and communities. This section covers the broad range of economic opportunities created due to the proliferation of DCNs. We further look at economic efficiencies that can be attributed to DCNs and the mechanisms they introduced into information ecosystems. We use a combination of available data and examples to support our assertions.

2.1. Economic Opportunities created by DCNs

The proliferation of DCNs created several new economic opportunities. They facilitated the growth of business models that were thought to be highly improbable or previously associated with high transaction costs. They even enabled new job categories. As DCNs transcended geographies and economic divides, a range of new opportunities were created and amplified. We broadly divide these new economic opportunities into three types – creating new ecosystems generating economic activity, benefits for Indian businesses, and facilitating an advertising model.

2.1.1. New ecosystems generating economic activities

The proliferation of DCNs helped create ecosystems that were previously non-existent or highly niche areas with high barriers to entry. In addition to reducing such barriers to entry, they also reduced operational costs. Social interaction remains central to the involvement of DCNs in triggering economic activity. This contributed to the creation of a range of new jobs and additional avenues for businesses. Social interaction also contributed to the growth of gig labour, where informal networks allowed the discovery of suitable candidates for specific requirements. This helped job seekers and recruiters in various sectors and allowed the freelance economy to be a potential alternative to conventional employment.

Further, DCNs provide small businesses with the architecture for better access to networks that can translate into avenues for reaching new audience and accelerating growth. The integration of DCNs with economic activity was evident when on October 4th 2021, Facebook ran into an outage that lasted over 6 hours. Businesses and individuals, particularly in India, Brazil and parts of Africa, suffered considerable losses, where Meta's suite of apps was critical infrastructure for commerce and communication.³⁸

2.1.1.1. Creator Economy

The creator economy could be defined as an enabling ecosystem that helps content creators reach an audience through infrastructure that facilitates content moderation, business relations, monetisation, and funding.³⁹ It is estimated to be employing about 50 million+ creators globally,⁴⁰

and generates social capital and income for creators engaged full time and part time. India's creator economy is an evolving space, which saw disruptive growth through the pandemic. Influencer marketing contributes heavily to the economic activity driving the creator economy, which alone is estimated to have a market size of almost 10 billion USD.⁴¹ The Indian influencer marketing industry is calculated to have a market size between 75-150 million USD according to some sources,⁴² while another report pegs it at 900 Crore INR.⁴³ The growth in this space has also contributed to the inflow of investment in start-ups in the creator economy, focusing on monetisation and business management.⁴⁴ While short and long-form video appears to be most popular, Indian creators are also moving to the live-streaming economy⁴⁵ and audio content creation.⁴⁶

There are multiple benefits from the creator economy. DCNs also offer support funds for creators, if not regular pay-outs for content creation.⁴⁷ Income generation can happen through monetisation of content through advertainments, where content for entertainment incorporates elements of advertisement.⁴⁸ Revenue generation can be through platform pay-outs based on ads served adjacent to the content, product placements, viewer subscription, or all of the above. In early 2020, when TikTok was still available in India, Indian creators featured amongst the top earners on the DCN.⁴⁹ The losses incurred by creators after the Government of India's decision to ban TikTok in India, who could not replicate such success on other DCN services, provide evidence of using DCNs.^{50 51}

In many cases, the creator economy acts as an arm of traditional media.⁵² In India, traditional media includes user-generated content as part of their regular programming.⁵³ Instances of content creators shifting to TV channels with programmes of their own is another way traditional media incorporates the phenomenon of content creation within itself.⁵⁴ This shows that the creator economy can serve as a talent discovery platform for other channels of entertainment, including films, the music industry and popular media.⁵⁵

2.1.1.2. New Job Categories

In addition to content creation as a career option, DCNs have also created other employment opportunities. It has mainstreamed jobs that were previously in the fringes of the media and entertainment fields. Graphic designing opportunities have increased manifold, employing large numbers of people. Video editing, once limited to motion pictures, has now become an integral part of social media campaigns. Job opportunities are growing across a range of allied services

related to DCNs. They include engagement coordinators, content curators, community coordinators, social media analysts, and social media managers on the business management front; content-related opportunities such as content writing, UX design, virtual assistantship, photography, videography and editing. Firms have in-house roles that provide stable income and employment for people with the required skills to manage the firm's presence on DCNs. The reach provided by DCNs has nudged businesses to invest more in marketing, creating opportunities there as well.⁵⁶ This has opened new avenues for talent management firms, advertising, and public relations agencies.⁵⁷ These developments coincided with an increase in access to the internet and mobile devices in India, facilitating job opportunities in Tier-2 and Tier-3 cities.

2.1.1.3. Leveraging Networks for Job Opportunities

The growth of DCNs occurred in parallel with the after-effects of the 2008 recession, triggering people to reach out to the networks provided by them for job opportunities. While exclusive gig work platforms exist, DCNs act as an alternative for jobseekers to meet prospective employers.⁵⁸ This works not only for full-time employment but also for finding short-term "gigs". Freelance workers use DCNs for these benefits. In India, this effect was evident during the pandemic.⁵⁹ Self-employed persons in skill-based jobs gained more access to gigs through DCNs.⁶⁰ The pandemic exemplified this use for skill-based services such as haircare in Tier-1 and Tier-2 cities when lockdowns and closures threatened their income.⁶¹ Many skilled workers also utilise DCNs to signal expertise, which helps them land gigs.⁶²

2.1.2. Benefits for Indian Businesses

DCNs have improved market access for Indian businesses immensely. Analytics, visualisation, and discovery, inbuilt into DCNs, have helped Indian companies cater to audiences across the globe. Web 2.0 provided market opportunities for a broader range of Indian products and services. This parallels the growth of the Indian e-commerce sector's cross-border growth, where India grabs the 9th spot in the world.⁶³ The increased visibility of Indian products helps sellers (big⁶⁴ and small⁶⁵) generate income across borders. Advertisements and product placements promote direct-to-customer sales, allowing businesses to benefit from product discovery that translates into sales. This avenue opened previously restricted markets to small businesses, which would otherwise be limited to local markets due to high barriers to cross-country trade.

DCNs cater to many needs of small and medium businesses and facilitate better operations. The technological infrastructure helps small enterprises compete better with larger organisations in multiple ways. They anchor the social commerce industry - a subset of e-commerce that is driven by interactions on DCNs.⁶⁶ Monitoring the activity on DCNs help these businesses understand industry trends in real time, which allows them to modify their products/services and business practices to suit the demands from the market better. DCNs enable businesses to interact directly with consumers/prospective consumers, significantly reducing transaction costs. They also serve as a communication channel for small businesses when transaction doesn't happen on the DCN. This has facilitated viable income opportunities for many across India.⁶⁷ The communicative element in DCNs also helps them improve customer service and engagements. Commenting and direct messaging features allow businesses to interact more humanly with prospective customers, which aids the conversion of presence on DCNs to sales.⁶⁸ It can also help them track word of mouth marketing, coupled with genuine suggestions from consumers.⁶⁹ It allows them to perform analytics on granular aspects, particularly on sales and marketing. This helps them make better business decisions at much lesser costs. They also open up entirely new markets. The case study of online thrift stores offers an example of DCNs facilitating shifts in cultural approaches to certain businesses.⁷⁰ While buying used clothes is generally looked down upon in India, there has been a spurt of online thrift stores selling "pre-loved" clothes⁷¹ in the past couple of years. Similar market opportunities have been created for businesses that produce art prints, and custom-made gifts, which were previously dominated by local businesses and e-commerce platforms.

Additionally, DCNs have collaborations with newsrooms which helps them scale up their activities. These include funding in the form of grants⁷² and donations,⁷³ as well as marketing support.⁷⁴

2.1.3. Advertising Ecosystem

The changes in the advertisement ecosystem can be termed the most significant market transformation brought about by DCNs. Advertisements facilitated by DCNs challenged the reliance on big media budgets and billboards. Targeted advertisements allow small players to access ad space to appeal to potential customers directly, thereby reducing transaction costs from interacting with multiple parties. For consumers, targeted ads help reduce search costs and improve match quality (the difference between qualities desired by the consumer and those of the advertised product).⁷⁵ Digital ad spending is second only to television ads while maintaining

the highest growth rate across India.⁷⁶ With over 29% of the market, DCNs firms account for the highest share of the market.⁷⁷ This is also reflected in the greater number of advertisement and PR agencies focusing solely on digital marketing, including newer models such as influencer marketing.⁷⁸

With the advent of DCNs, businesses have more options for sustenance. Many DCNs operate on the advertisement-supported business model where they provide access to their services in return for tracking users' activities, both on and off the platforms, and serving them targeted advertisements. The business model enables the trade-off of personal data helping users access spaces that would otherwise be inaccessible due to the costs involved.⁷⁹ It also helps make other platforms more accessible, whereby agreements with DCN operators allow users to utilise this trade-off to access third-party services without authorising other organisations to exploit user data.⁸⁰ Ad tech tools provided by DCN operators enable various services to offer ad-supported content for free/at low costs. Revenues from the advertising business have also helped DCN operators fund speculative/ambitious ventures or improvements in technology (e.g. machine learning).⁸¹

Finally, it also mimics the format followed by cable TV channels where advertisements provide revenue in addition to subscriptions and fees. The advertisement ecosystem thus helps subsidise the use of multiple services on the internet and generate revenue for businesses.

2.2. Economic Efficiencies created by DCNs

Calculating the economic efficiency of different domains is an inherently difficult task. At the level of algorithm design, informativeness is proposed as the near equivalent of economic efficiency.⁸² We identify increased informativeness and online social graphs as tools for creating economic efficiency, which has led to the compounding of benefits created by DCNs.

2.2.1. Greater Access to information

DCNs accelerated the transformation from the industrial society to the information society.⁸³ The amplification of information incentivised people to engage in the information economy.⁸⁴ They helped provide more information to more people, while aiding further information

generation and consumption in an information economy.⁸⁵ This is made clearer by a comparison with non-DCN networks such as blogs, where information doesn't travel far and wide with the ease that it does on DCNs.⁸⁶ Thus, they reduced transaction cost by bringing in more efficient allocation of time and informational resources. The benefits of such access to information were evident during the second wave of the COVID-19 pandemic in India, where DCNs functioned as a national helpline providing real-time information to a larger audience.⁸⁷ There are concerns of information overload and quality of information, but the efficiency they brought about by easing the access to larger quantities of information is undeniable.

2.2.2. Online Social Graph

The online social graph was a novel feature introduced by DCNs, which contributed immensely to easing the flow of information. Online social graph refers to the network of real connections through which people communicate and share information on any networked platform.⁸⁸ Facebook was the first to characterise this as a tool through an API, where developers could direct further efficient use of the social communication platform.⁸⁹ Online social graphs improve with increasing network completeness, improving the flow of information through the network of connections they span.⁹⁰ This further acted as a useful tool for economic activities mediated by the DCN, as targeted delivery of content can be improved.⁹¹ Social graphs enable social traversal, which forms the cornerstone to ensure the success of a DCN.⁹² While this may take the form of discovery or active invitations, it remains central to scaling up of activity on any DCN. It also benefitted many sharing economy businesses, which used profiles and connections collected from potential users, employing digitised social capital as a gateway to economic activity. This use of social graphs as a measure of trust helped businesses conserve their financial resources while gauging the actors involved in the transaction better. Lastly, it contributed to creating a consumer surplus benefitting consumers in economic transactions where DCNs played a part.⁹³

3. *DCNs and Society*

This section aims to identify where DCNs can play a role in mitigating harms and providing benefits to society. To represent society, we use a visualisation of modern society proposed in *Social Media, Politics and the State*⁹⁴. We focus on the socio-political, social-economic, socio-cultural roles presented alongside this model. We further expand the cognition-communication-cooperation (tripleC) framework⁹⁵ to identify five broad, non-mutually exclusive sets of actions enabled by DCNs, identity formation/expression, interaction, information production/consumption, organisation, and commercial transactions.

We then use examples to illustrate where either DCN capabilities or networks, or both, have been beneficial or reduced harms. We do not hold the view that online communication will always be ‘emancipatory’ in nature⁹⁶. Nor do we seek to redistribute any credit attributable to the primary actors themselves to DCN operators.

3.1. Modern society and roles

Societies are complex and can encompass a range of interconnected, dependent subsystems ⁹⁷. For a theoretical frame, we use Trottier and Fuchs’ representation of modern society that contains the following subsystems, overlapping state and economic spheres, a cultural sphere, and a civil sphere that mediates the cultural and overlapping state and economic spheres (Figure 1)⁹⁸.

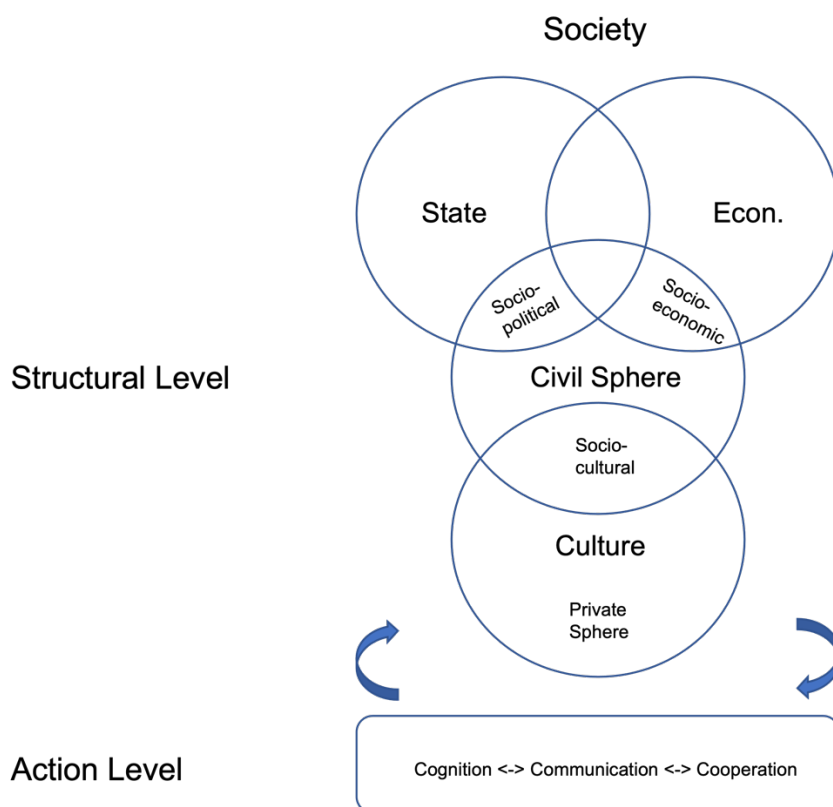


Figure 1: Trottier and Fuchs’ visualisation of modern society⁹⁹

The civil sphere in the proposed model is composed of socio-political, socio-economic, and socio-cultural movements. They identify each of these movements as struggles for different ends and social roles within the subsystems.¹⁰⁰

3.1.1. Movements

- Socio-political: For the “recognition of collective identities via demands on the state.”
- Socio-economic: For the “production and distribution of material resources created and distributed in the economic system.”
- Socio-cultural: Have “shared interests and practices related to ways of organising one’s private life.”

3.1.2. Roles

Table 1: Typology of roles in Trottier and Fuchs’ representation of modern society

Sphere / Subsystem	Types of Roles (examples)
Political	Citizens, politicians, bureaucrats, political party members
Economic	Entrepreneurs, consumers, investors, managers, employees, freelancers
Private	Romantic partners, family members, friends, audience members, users
Socio-political	Activists and advocates for causes such as privacy, feminism, LGBTQIA rights, anti-discrimination, and so on.
Socio-economic	Activists and advocates for causes such as labour/worker rights, consumer protection, environmental protection, and so on.
Socio-cultural	Resident Welfare Associations, fan clubs, religious service attendees, cult members.

3.2. Actions facilitated by DCNs

Trottier and Fuchs also use the tripleC framework to explain that DCNs allow actors to perform tasks of creation (cognition), share them others who can respond (communication), and modify them (cooperation) in an integrated manner, and that they can all occur in the same social space (capability built by DCN operators). They state that actors take on integrated roles making the boundaries between the different spheres porous. Based on our definition of DCNs, we also need to consider that this can occur across DCN networks. We expand the tripleC framework to

identify 5 kinds of actions that DCNs can enable actors in this conceptualisation of the modern society to take (Figure 2). We focus on situations where DCNs have played a role in mitigating harms or providing benefits. The examples used are illustrative and not exhaustive.

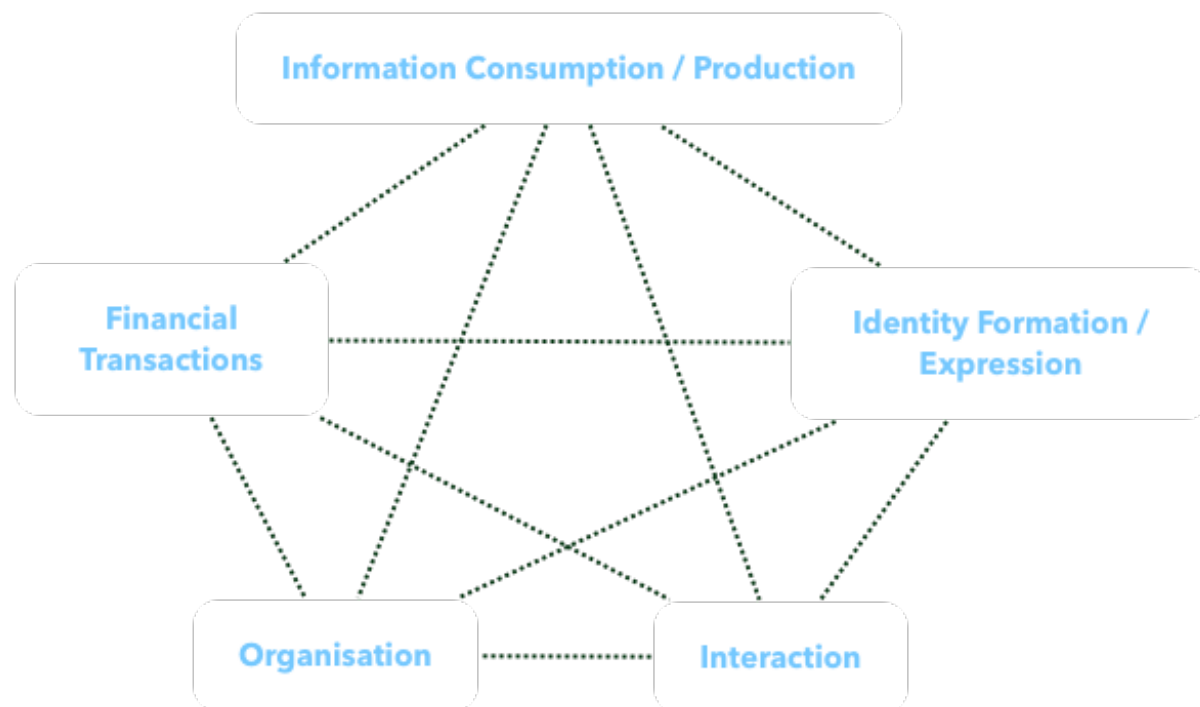


Figure 2: Actions enabled by DCNs

- **Information Production/Consumption:** Low entry costs and capabilities for users to generate and share content enable participation in DCN Networks at scale. Under this action, we refer narrowly to the ability to transmit information or receive information.
- **Interaction:** Interaction involves receiving and then responding to information. This can manifest itself in various ways. It can mean mutual communication between two or more actors belonging to any of the societal subsystems in Table 1. This communication can also be directed at a completely different set of actors and may or may not include the original set of actors. Responses need not be limited to communication / sharing on DCN networks but can also include actions taken off them such as physical actions, internalising information, or any of the 5 kinds of actions identified in this section.
- **Identity Formation/Expression:** Identity formation and expression are complex processes. User-profile-centric DCN services provide a natural home for the performance of identity¹⁰¹, which itself can lead to the accumulation of social capital.¹⁰² Identities also

evolve as actors across the subsystems consuming information, interacting with information and other actors across DCN networks.¹⁰³ These identities (individual or collective) may then be further expressed using DCN capabilities and features.¹⁰⁴

- **Organisation:** A combination of DCN capabilities and networks reduces barriers for groups of people to cooperate and act towards achieving common or similar goals.^{105 106} They can also aid the scaling phase of self-organising or spontaneous movements.^{107 108 109} It should be noted that the mere existence of DCN capabilities and networks is not sufficient. The networks also need to include motivated actors with incentives to do so.¹¹⁰
- **Financial Transactions:** In this context, we refer to transactions where DCNs play a connective role, and not where the DCN operators are themselves a party to the financial transaction (ad revenue sharing, creator pay-outs, create their own tokens, news partnerships, funds for research and civil society organisations, and so on).

We first use a hypothetical situation to illustrate how these actions may overlap and follow-up with specific cases. The latter are grouped under one of the five actions for demonstrative purposes only.

Citizens (political actors) may observe or experience a service deficiency or find themselves at the receiving end of inequitable outcomes as a result of inaction, or deliberate actions taken by a bureaucrat or politician (political actor). Such citizens may use DCN capabilities to share details of this experience (information production). Fellow citizens may read this post (information consumption) and choose to share it further on the same or other DCN services (interaction). The interaction may also involve propagating the message via other means such as phone calls, direct conversations or offers to help, escalate and so on. They may even add their own experiences (information production). Some may be motivated to do so because of a common identity which may be based on regional, religious, socio-economic class or caste affiliations; political beliefs; nationality; and so on (identity expression). Citizens may also coordinate to raise awareness (organisation) in physical spaces, digital spaces, or both. In some cases, this may fall within one or more of the movements in the civil sphere (socio-political, socio-economic, socio-cultural). Organisation can even include fundraising (financial transactions).

Either as a consequence of these organisation efforts, or through their own information consumption, a set of actors that can affect scale such as journalists (economic actor), politicians

(political actor), influencers (multiple, context-dependent roles) may also participate indirectly, through amplification of these messages (interaction) or directly by reporting on them (information production), contributing to mobilising efforts (organisation, identity expression, financial transactions). These events may elicit a response/corrective action from the bureaucrats, politicians directly involved. Similar dynamics are involved if political actors like politicians, bureaucrats, and citizens, are substituted with economic actors like entrepreneurs, employees of private firms, and consumers, or socio-political, socio-economic, socio-political actors.

Notably, even citizens who choose not to participate directly in sharing, organisation, fundraising can be affected in a way that leads to some form of involvement in the future. They may take note of the event, try to learn more, communicate with others (information consumption, interaction) and in the process develop an affinity based on shared identity, and experiences (identity formation), resulting in direct participation in the future (information production/consumption, interactions, organisation, financial transactions).

3.2.1. Information Production/Consumption

Socio-economic and socio-political actors can communicate their lived experiences (platform-economy workers^{111 112}, Me-too^{113 114}); create awareness for their causes (net neutrality¹¹⁵, LGBTQIA rights¹¹⁶).

Among economic actors, the short-video format and a user experience that reduced dependence on literacy enabled more creators¹¹⁷ to build an audience. Journalists (as entrepreneurs) have used the ability to live-stream at scale¹¹⁸ to broadcast programming that they may have been unable to at corporate media houses¹¹⁹, as employees rely on DCN capabilities for dissemination of information¹²⁰.

Political actors (citizens) can draw the attention of those responsible (bureaucrats, politicians) to inadequate infrastructure,¹²¹ service delivery, requests for help.¹²² Content recommendation/selection and search features can further reduce barriers to content discovery. News consumers can access a wider variety of sources.¹²³ Private actors can watch conferences, events, do-it-yourself/educational content in real-time or at their leisure.

3.2.2. Interaction

Private actors (families, romantic partners) and socio-cultural actors (Residents Welfare Associations) can communicate privately. The former may also share experiences with a wider audience. Economic actors (consumers) can raise grievances, and another set of economic actors (employees of companies) can respond.

Political actors (citizens), economic actors (consumers) may also favourably respond to activities on DCN networks by social-political or socio-economic actors through direct engagement, amplification of messages or support in the form of effort/funds resulting in a multiplier effect.

3.2.3. Identity Formation/Expression

Consuming information produced by and interacting with various actors on DCN networks can play a role in identity formation and evolution¹²⁴.

As socio-political actors, sexual minorities and LGBTQIA individuals and communities are expressing their identities on DCN networks.^{125 126 127} As socio-political and socio-cultural actors, Dalit/Bahujan/Adivasi communities also leverage DCN networks to express their identities, challenge prevalent discourse and push back.^{128 129 130}

3.2.4. Organisation

Organisation can take the form of expression of dissent on DCN networks or physical protests involving political and socio-political actors (citizens/activists against politicians/bureaucrats)¹³¹, economic actors (consumers/employees against employees/management/entrepreneurs); raising funds¹³² or creating awareness;¹³³ coordination of service delivery¹³⁴/aid¹³⁵ for fellow citizens; knowledge sharing, and so on.

3.2.5. Financial Transactions

Even before DCN operators developed features allowing transactions, economic actors (entrepreneurs such as home chefs,^{136 137} homemakers,¹³⁸ hawkers,¹³⁹ retail stores) were accepting orders and managing consumer relationships through direct communication. Some are also showcasing products via video calls¹⁴⁰. Students pursuing higher education hosted fund-raisers to crowdfund their fees.^{141 142 143}

In many of the examples cited above, the changing scale and structure of human networks and the speed of information flows have a role to play in enabling one or more of the 5 types of actions identified. Different actors may be involved in varying permutations and combinations of these actions within the same sequence of events. While illustrative examples may not demonstrate the benefits in specific contexts such as travel,¹⁴⁴ healthcare,¹⁴⁵ education,¹⁴⁶ academia¹⁴⁷ etc., we expect that the this set of 5 actions can be used to explain them. It is worth noting, however, that the model may not completely capture them in the context of psychological well-being/mental health.^{148 149}

4. Conclusion and Discussion

Digital Communication Networks have enabled both benefits and harms to societies around the world. Some of the same dynamics which have created new harms and exacerbated existing problems, such as lower barriers to entry, changes in scale and structure of human networks, speed of information (virality), also play a role in the benefits they enable.

In this document, we identified potential benefits for markets and societies in India. In markets, DCNs have enabled: the creation of new sources of income for individuals; new types of jobs or greater demand for some existing jobs; networking opportunities and channels to market skills/seek employment. They have also provided opportunities for businesses in India, such as: better market access or creation of new markets; direct channels for engagement with consumers which potentially reduces costs for lead generation, market survey and gathering feedback, and so on.

Some of the positive externalities of the advertising-supported business model of DCN operations include: more advertising opportunities, especially for small and medium businesses; revenues that can fund/subsidise improvements in technology. For consumers, DCNs can reduce search costs through easier product discovery or targeted advertisements. By lowering transaction costs, providing greater access to information/knowledge, helping the formation of human networks, DCNs can also facilitate better allocation of resources.

In societies, DCNs play a role in enabling five kinds of actions: information production/consumption; interaction; identity formation/expression; organisation; financial transactions. With illustrative examples, we demonstrated that combinations of one or more of these actions from a range of actors across various societal roles (political, economic, private,

socio-political, socio-economic, socio-cultural) the capability and network components of DCNs could provide benefits or mitigate harms.

It is important to note, as the first paper¹⁵⁰ in this series showed, that the benefits are not unequivocal, and equitable outcomes are not guaranteed.¹⁵¹ Better allocation of resources alone may not translate to benefits at scale, and social graphs will not necessarily yield reliable connections. The scaling effects that DCNs have on social problems affect social cohesion,¹⁵² which can adversely impact economic activity across the board.

However, it is necessary to enumerate these benefits for multiple reasons. First, while a significant amount of literature documenting harms attributed to DCNs has been produced in the last 5-6 years, a renewed look at the benefits has not been taken up. Just as we need further study to better grasp the harms in the Indian context, there is also a requirement for more research about the benefits DCNs can enable. In recent weeks, notable voices in the internet policy space have also called for a better understanding of their benefits as well^{153 154} since they will be crucial for any trade-offs that need to be made in the future.

Second, multiple jurisdictions (UK, Canada, Australia, Ireland, EU) are considering online harms/online safety based approaches to regulate DCNs.¹⁵⁵ The 'online' framing can result in obscuring linkages between internet spaces and physical spaces, as well as proposing measures that do not fully account for the social problems underlying these harms.¹⁵⁶ Though these are complex, multi-year processes, contemporary events such as 'The Facebook Papers'¹⁵⁷ can provide a fillip to these efforts. India may be considering harms-oriented legislation as well.¹⁵⁸ In the absence of an updated articulation of benefits, there is a risk of enacting regulation that may not address underlying causes and adversely impact DCN capabilities and networks, thereby curtailing the economic and societal benefits that DCNs can enable.

Third, conversations to determine the most suitable ways of governing DCNs are still taking shape. While we do not endorse any proposed solutions at this stage of our study, alternatives like middleware¹⁵⁹, competitive compatibility¹⁶⁰, *Protocols not Platforms*¹⁶¹, Magic APIs¹⁶² or calls for greater decentralisation and community-driven responses can lead to market opportunities for India's technology companies and engineering talent. Competitiveness in this market will require an appreciation of potential harms as well as benefits.

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