

Digital Social Enterprise for Sustainable Development: Insights from the Case Study in Nepal

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Abstract

It is generally agreed that digital social enterprises (DSE) through the digitalization process can contribute to sustainable development. However, there are a few theoretical and empirical studies in this research stream. To address this knowledge gap, we conducted a qualitative interpretive case study in Nepal. Applying theory of affordances as an analytical tool, we identified five digital affordances: transactability, communicability, accessibility, manageability, and digitizability. By actualizing these affordances, DSEs can contribute to access to market and finance, social engagement, waste management, and digitized information. We also identified various challenges such as lack of awareness about digital affordances and capabilities to actualize those affordances, lack of digital culture, and poor mapping system that can inhibit the actualization of the affordances and showed the facilitating conditions that can address these challenges. Finally, we suggest future research avenues.

Keywords: Digital Social Enterprises, Theory of affordances, Sustainable Development, Nepal

1. Introduction

The digital disruption brings forth the possibilities of integrating digital tools and technologies for social enterprises in their business activities. For instance, social enterprises through digital social innovation create collaborative innovations, and co-creation of knowledge and solutions to address social needs (McLoughlin et al., 2019). By using digital technologies such as telemedicine and online teaching, social enterprises are creating impact on health (Rosca et al., 2020) and

education sectors (Parthiban et al., 2020). For doing so, social enterprises can work in a hybrid model where both digital and non-digital capabilities are important in performing their entrepreneurial activities (Masiero & Ravishankar, 2019). In this paper, we are specifically focusing on the social enterprises that are not just using digital tools, but the use of such tools and technologies also changes their business processes. We have coined such enterprises as digital social enterprises (DSE) and defined them as below.

Digital social enterprises are businesses that operate using digital tools and technologies by changing their business processes, either partially or fully, with the primary aim of addressing the existing problems in society by creating social, economic, and environmental values.

Based on the definition above, DSEs are the businesses that capitalize the existing problems in society by operating within social, business, and environmental motive. So, one of the core essences of DSEs is leveraging digitalization on creating and delivering values in the triple bottom line principle of sustainable development: economic, social, and environmental (Ambati, 2019; Břanda & Urbančiková, 2020; Elkington, 1997; Goyal et al., 2020). By implementing digital tools and technologies in their activities, DSEs change their business processes compared to non-digital social enterprises (Parthiban et al., 2020).

DSEs are important for supporting sustainable development, and capitalizing on technology might help such enterprises to expand their impact (Warnecke, 2018). For example, the use of digital technologies can help reducing economic and social inequalities (Ratten, 2018). DSEs can add value to collaboration, agreement, and action that helps addressing poverty and environmental issues (Goyal et

al., 2020). They also provide access to healthcare services through telemedicine (Rosca et al., 2020).

The existing studies in this research stream are either techno-deterministic or socio-deterministic. However, there are a few studies that show sociotechnical perspectives. By applying the concept of sociomateriality Pankaj and Seetharaman (2021) show how DSEs can play balancing act to connect material and human agencies that may lead to economic and social sustainability. They argued that digital technologies such as enterprise resource planning ensures a seamless flow of information between diverse sets of stakeholders and enables better resource planning. In another study, Javed and Yasir (2019), using the concept of virtualization explained how DSEs can create a virtual network and expand their network with international partners. However, the existing approaches do not explicitly unfold the sociotechnical process of how DSEs perceive and actualize such action possibilities of digital tools and technologies in order to attain their goals. Furthermore, there is the need to identify and evaluate possible challenges and ways to address such challenges while DSEs are aiming to contributing to sustainable development. To address this knowledge gap, we formulated following two research questions (RQ):

RQ1: How DSEs perceive and actualize the action possibilities of digital tools to contribute to social, economic, and environmental dimensions of sustainable development?

RQ2: What are the possible challenges and facilitating conditions for perceiving and actualizing such action possibilities?

To answer these research questions, we conducted a qualitative interpretive case study in Nepal. We built on the theory of affordances. One rationale for using the theory of affordances in this context is its relational nature. The theory considers both technical and social aspects in terms of how DSEs contribute to sustainable development.

The rest of the paper is organized as follows. Section two describes the theory of affordances and its relevance in our study. Section three discusses the research method, followed by findings in section four. In section five, we discuss our contributions, limitations, and state the future research avenues in section six. Finally, we conclude our paper.

2. Theory of Affordances

The concept of affordances was introduced in the field of ecological psychology by Gibson (1977) to refer what the environment affords to an animal in terms of how it can be used. In this paper, affordances

are referred as action possibilities that emerge from the characteristics of an object (such as digital tools and technologies) to the goal-oriented actors (e.g., DSEs). The actors, however, should possess certain capabilities to actualize those action possibilities (Volkoff & Strong, 2013). Since the theory of affordances explains the relational phenomenon of actor's use of available technology in attaining certain goals or objectives and its consequences (Thapa & Hatakka, 2017), it is relevant to studying the technology-involved practices of DSEs in creating and delivering values to economic, social, and environmental sectors in the society.

There are various stances on affordances based on their ontological and epistemological assumptions (For details, see Lanamäki et al., 2016); however, we are following the stance suggested by Volkoff and Strong (2013) and Thapa and Sein (2018). They argued that affordances are real and exist without our knowledge. Furthermore, affordances are relational and contextual. Meaning that a single object (tool) can possess multiple affordances depending on the actor's objective of using that tool. Similarly, the objects (digital tools) with similar features can have different affordances based on the context of use. However, to bring the affordances to actors' knowledge and actualize them, they need various facilitating conditions.

The theory of affordances focuses on individual-level affordances of goal-oriented actors. However, the affordances in our study are collective and shared organizational level affordances (Leonardi, 2013). Because the organizational level affordances are based on group perceptions and patterns of use. In our case, such affordances are perceived and actualized by the actors associated with DSEs.

3. Research Method

Since our objective was to explore and understand the process by which DSEs can contribute to sustainable development, we conducted a qualitative interpretive case study (Walsham, 2006) in Nepal. The reason for selecting DSEs in Nepal is the researchers' familiarity with the context. Furthermore, the Government of Nepal has initiated *Digital Nepal Framework* to leverage digitalization in order to promote growth and sustainable development (see: <https://ndri.org.np/ournews/digital-nepal-framework/>). Promoting the use of digital tools and technologies through digital social enterprises in bringing positive change in the society is one of the priorities of this framework. In our study, we have selected the DSEs that are working on some of the core sectors included in this framework: such as agriculture, health,

education, and finance. Since the framework is in its initial stage of implementation, this study aims to explore what could be the possible challenges and ways to mitigate such challenges while implementing the framework.

In doing so, we conducted thirteen semi-structured interviews with fourteen respondents. The interviews were conducted both online and in person. The interviews lasted sixty minutes on average. In addition, we conducted two focused groups. Provided the respondents' consent, the interviews were recorded and transcribed. Interview notes were created for the interviews that were not audio recorded. All the participants were engaged in the activities of DSEs. The online interview was conducted in October 2021, while the in-person interviews and focused groups were conducted during the period December 2021 to March 2022. Furthermore, to enhance our contextual understanding, we looked into documents including newspaper articles, and presentations in the form of audio and video recordings from the DSEs or the organizations that are directly collaborating with DSEs. The interviews were conducted in both Nepali and English. The interviews conducted in Nepali were first translated from Nepali to English and transcribed by one of the researchers. The second researcher went through the interview recordings and transcription which served as validation of the translation and transcription conducted.

We applied thematic analysis to identify, analyze, and generate themes from our data (Braun & Clarke, 2006). Since the analysis of qualitative data was driven by our theoretical interests and research objective, we have chosen a theoretical approach to thematic analysis (Braun & Clarke, 2006). Following Braun and Clarke (2006), we started our data analysis by familiarizing ourselves with the data. Thereafter, initial codes were generated, based on the data we extracted from the transcriptions. The coding was based on the pre-understanding we developed through familiarizing ourselves with the data. Then, in the next step, we reviewed the codes and generated the themes. Any adjustments needed were made in an iterative process in order to remain within the scope of our research interest. In the next step, the themes were named and defined. We describe the themes in detail in the finding section below.

4. Findings

We identified five digital affordances: *transactability*, *communicability*, *accessibility*, *manageability*, and *digitizability*. These digital affordances are labeled following the guidelines provided by Thapa and Sein (2018), as affordance

refers to a digital tool's ability to do a particular task. Hence, we added 'ability' to each affordance identified. Our analysis shows that by actualizing these affordances, DSEs are contributing to four areas of sustainable development: access to market and finance, social engagement, waste management, and digitized information.

In this section, we present four examples of DSEs from our study that are working on abovementioned four areas of sustainable development.

4.1 Access to Market and Finance

R&D Innovative Solutions is a DSE, started in 2012, that addresses the challenges faced by farming communities in Nepal (see: <https://rdinnovative.com.np/>). Out of several, some of their activities that we find relevant to our research objective are access to agricultural information in the local language in the form of digital magazine, e-commerce platform to trade agricultural inputs (e.g., seeds) and to connect farmers to the market, and provide access to finance to the farmers through farmers credit card. The farmers credit card is R&D's initiative to enact the government policy on providing subsidized agriculture loans to the farmers who particularly lack information and access to get the loan. R&D has designed a system where the farmers get a credit card from the lending financial institutions having a QR code. The credit card can only be used to buy agricultural inputs and resources from the merchants/vendors, who sell agricultural products only. The vendors should be registered in this network specially created for this initiative. In the countries like Nepal where the farmers lack digital literacy, and hence, are not always capable of using complex digital technologies, the credit card with a QR code is novel. Because this makes the transaction easy for farmers. For example, when the farmer purchases something from a vendor, the vendor scans the QR code from the farmers credit card and requests the price of the items bought. The farmer/buyer gets the notification in the form of a text message in Nepali language including the amount, details of the item purchased, and the name of the vendor. After the farmer confirms the details and approves it, the transaction completes. Lending through the farmers credit card allows the banks and financial institutions to conduct regular inspections and monitoring of where the loan is being used. This is possible because each time when the farmer buys something from the registered vendors in the network, a digital footprint is created. Such transactions are recorded in the system and the data generated over the period serves as a validation that whether or not the borrowing farmer is credible to provide the loan in the future. This way, the data serves

as collateral for the farmers, and banks and financial institutions trust that their money is being spent in the right way. Through this system, R&D is contributing to Access to market and finance.

The affordances of digital tools R&D actualizes to increase access to market and finance are accessibility and transactability.

Accessibility. The accessibility affordance in our study refers to at least three things. First, DSEs are using digital tools to provide access to the market for the products and services that are being produced at the local level, where such products and services often lack access to market and marketing capabilities. Second, when the local farmers lack access to banking services such as financing for their businesses, DSEs are bridging this gap by using digital tools and technologies. Third, such tools provide access to agricultural information in the local language.

The local farmers produce agricultural products in small amount which does not attract the large vendors to go and buy their products. There arises a situation where a lot of products are wasted because they do not get market. DSEs in such case are providing access to the market for the local producers and farmers by creating e-commerce platform. R&D in this instance has created silos and cold stores across different parts of the country where they collect and store the agricultural products and sell them through the e-commerce platform. As one respondent from R&D stated:

“... the problem now is with the market connection. Because the production of fruits and vegetables is not in bulk amount everywhere. And where there is less product, the bigger trader does not go there, and they [the farmers] do not get the market. [To bridge the gap between farmers and traders] we have our own e-commerce platform.”

R&D is also working in collaboration with banks and financial institutions to bridge the gap between local farmers and lenders by providing farmer's credit cards. The use of farmer's credit cards is helping in making the services of banks and financial institutions more accessible to the farmers who particularly lack the networking channel and capability to use complex digital tools.

Digital tools can also afford access to information. For example, R&D is making information available and accessible for the farmers in their local language in the form of an online agriculture magazine. The information contains but not limited to the recent trends and demands of agricultural products, prevailing diseases on crops and solutions to address these problems. This way, R&D is helping the farmers find the market for their products. As one of the respondents from R&D said:

... if someone is looking for any information related to agriculture, there was information but only in the English language. We collected such information in English and translated it into Nepali in an easy and understandable language.

Transactability. The transactability affordance refers to the possibility of digital tools to be used to conduct business activities of DSEs. For example, the e-commerce platform makes the affordance of transactability available for the people who want to buy and sell agricultural products. Likewise, farmers credit card in the case of R&D affords the possibility of providing the loan to the borrowers, as the lending institution disseminates the loan in the form of credit balance which the borrowers can only spend on purchasing agricultural inputs from the vendors registered in the network. As our respondent from R&D mentioned:

“We have given the farmer's card with a QR code. They will have a balance on their card, and the merchant will scan and request the amount of money the farmers should be paying to the merchant. We have made the transaction secure, meaning that the farmer's acknowledgement [approval] is needed, it comes as a text on their mobile phones.”

4.2 Social Engagement

Bihani Social Venture is a DSE working on addressing the issues of loneliness, dependency, and ageist stereotypes by creating and providing platforms where elders can contribute their skills, and expertise to bring the change (see: <http://www.bihani.com.np/>). The activities Bihani conducts, aligning with our research phenomenon, are social engagement and participation among their members. They organize activities and events that aim to bring people with similar interests together through different activities such as interactions, book-reading, musical events, festival celebrations, and so forth. By conducting such activities, Bihani addresses the issue of isolation among elderly people. Bihani's primary aim was to provide home-based services to its members depending on the member's needs and interests. The use of digital tools and technologies in Bihani has increased substantially after Covid 19. The DSE has now expanded its way to provide services to its members both through physical and digital involvements.

The affordance of digital tools Bihani actualizes to increase social engagement among their members is communicability.

Communicability. By communicability, we are referring to the possibility of digital tools being used as a means of communication and information

dissemination. The examples of digital tools used to actualize the communicability affordance are mostly social media, mobile applications, video, and audio-conferencing platforms such as Zoom.

Bihani was using social media such as Facebook, and WhatsApp groups, to inform about their services and offerings, activities, and events to their members. Later, they developed a platform where they can centralize all the information related to their activities and events. Because while organizing some events, it was difficult to call each individual member and ask if they are interested in participating in the events because not everyone has similar interests. According to Bihani, going to the website to get such information might still be complex. As mobile phone is accessible and an App is easier to navigate, they developed an App. Hence it became easier for their members to use and participate in the social events. One of the respondents from Bihani stated:

“We are trying to connect everything from that App such as our services and offerings, helpline, all the information regarding Bihani, and all the events and event calendars. We are doing this so that it becomes easier for them to get access to everything on one platform.”

As Bihani’s motive is to create a more equitable and balanced society by reducing the loneliness among elderly people, engaging in such events and activities is a way to make the society more inclusive for socially isolated people. As one of the participants mentioned, specifically in Covid 19 situation,

“They are more connected digitally these days. ... so that they do not feel isolated.”

4.3 Waste management

Khaalिसि (empty bottles) is a DSE started in 2016 to address the problem of waste management in Nepal (see: <https://www.khaalिसि.com/>). The lack of government initiative for managing the recyclable wastes and lack of public awareness was the main reason for starting Khaalिसि. There were individual recyclable waste entrepreneurs who used to work on their own to collect such waste from households, businesses, and restaurants. They used to go door-to-door asking if someone wants to sell the recyclable waste. In order to buy such recyclables, the waste entrepreneurs had to bargain for the optimal price with the sellers. This created hassle in their work. Khaalिसि invited those individual waste entrepreneurs to use their platform for trading recyclable waste. The waste entrepreneurs who use Khaalिसि’s platform to buy and sell the recyclables are called Khaalिसि Friends. The individual waste entrepreneurs who were disrespected due to the nature of their work started to

feel more confident and respected when they started to use Khaalिसि’s platform and when people started to call them Khaalिसि Friends instead of *Kabadiwala* (those who collect recyclables).

The affordances of digital tools Khaalिसि actualizes to for waste management are communicability, transactability, and manageability.

Communicability. Khaalिसि uses digital tools in order to maintain communication among the team members (Khaalिसि Friends) and with the recyclable waste sellers. As the founder of Khaalिसि stated:

“We use digital tools [mobile phones, WhatsApp] to reach out to our Khaalिसि friends, ... to stay in touch, to stay in communication – it sounds very mundane, but it is very revolutionary, especially in the case of Nepal.”

Khaalिसि also uses Facebook as a medium to share their important activities and programs that are intended to create awareness related to waste management, recycling, and the importance of keeping the environment clean.

Transactability. Khaalिसि is using digital tools such as online platforms and social media to receive the order placements of recyclable waste. Khaalिसि also uses GPS for location mapping so that the Khaalिसि friends find the location of the order easily. As our respondent stated:

“...online platforms and social media are used for placing and completing the order. Khaalिसि friends can see the order and go and collect.”

Similarly, using such platform also helps sellers of recyclable waste and Khaalिसि friends to schedule, place, and pick up the order. As the respondent added:

“[Khaalिसि friends] get the order in the place where they are located and just go and collect [recyclables]. [The recyclable sellers] can schedule the pickup depending on their own schedule. They do not have to wait at home waiting for someone to come and pick up the waste.”

Manageability. By manageability, we mean the possibility of a digital tools being used in waste management. One example is inventory management of the waste material collected. The inventory management also helps to maintain the in-and-out flow of the recyclable waste.

“We have an understanding about what we have in which depot, ... it’s very simple. But we keep track of what we have for example in Excel sheets.”

4.4 Digitized Information

Softech Foundation was started in 2007, with the main objective of providing information and communication technology solutions (see: <http://softechfoundation.com.np/>). Currently, they are

working with government enterprises. The enterprises under Nepal Government store information in paper-based format. One of the limitations of paper-based format is that whenever there are employee relocations within different offices, all the information about the files and records that employee has made goes together with that person. This hampers their internal management and administration. And to address this problem, Softech initiated digitizing paper-based records and information. They have created a digital portal so that the next employee with the help of an authorized and secured login can access that information. Digitizing paper-based information is one of the primary objectives of digital Nepal framework. The founder of Softech referred to digitizing information as a way to creating institutional memory which can also contribute to environmental protection.

The affordance of digital tools Softech Foundation actualizes for retaining institutional memory is digitizability.

Digitizability. By digitizability, we mean digitizing paper-based information. The digital tools and technologies especially, in the context of developing countries like Nepal afford to create institutional memory. Because, keeping the important information in paper-based format might have several problems such as missing or misplacing the information, and destroying the information. The examples of digital tools used for keeping institutional memory are official websites and record keeping software. As the CEO of Softech stated:

“... they [government offices] store information in the bulk of the physical paper. ... If they always continue making official documents on paper and store them forever...the physical store also has some limitations, isn't it true? This cannot be kept safe forever. ... natural disasters like fire or water can easily destroy such information.”

The affordance of digitizability also enables the creation of institutional memory, hence improves the knowledge management and administrative practices within the government organizations. As the CEO continued:

“... we started to develop software where we can enter and scan the information that is being stored physically. That will also create institutional memory. If we are able to create a portal, then no matter how many times the person working on specific task changes, everyone can get access to the same information.”

4.5 Challenges and Facilitating Conditions for Actualization of Affordances

In our study, we also identified various challenges that can hinder DSEs in perceiving and actualizing digital affordances vis-à-vis contributing to sustainable development. A few examples of challenges and facilitating conditions to mitigate the challenges are as follows.

Challenge: Lack of awareness. One of the main challenges that majority of the respondents mentioned was the lack of awareness about the possibility of digital affordances and capabilities to actualize them from the government side. This hinders DSEs in actualizing the perceived affordances. As one of the respondents from Softech mentioned:

“We tried for a long time convincing them [the government agencies] that if we do this [digitalize the process and activities] then we can address this problem. They themselves were looking forward to addressing this problem [paper-based work process]. But they have not quite realized how that can be done.”

Facilitating condition. In order to create awareness and enhance the capabilities of the users of digital tools, specifically in government agencies, the training and workshops for the government officials serve as one of the facilitating conditions. In our case, we found training programs attended by government officials in other countries also worked as a source of awareness. One respondent from Softech Foundation shares a story:

“People working in higher posts in government, such as joint-secretary or secretary, get to travel to other countries as well in order to get some sort of training. When they see the change in the way they work in other countries, be it digitization or storing information in a digital way, they understand the need to change the process in Nepal too. They understand that if we can implement this in Nepal, then we also can benefit from it.”

Challenge: Lack of digital culture. In Nepal, the lack of digital culture is another challenge for actualizing digital affordances. For example, our study shows, that people are hesitant to use digital platforms because they feel uncomfortable communicating online. For instance, the lack of digital culture can hinder the actualization of communicability affordance. As one of the respondents from Bihani stated:

“... it used to get difficult when we tried to invite them digitally so that they do not feel isolated. They seemed more reluctant on using Zoom.”

Another respondent from R&D also shared the story that shows the lack of online purchasing culture

among people in Nepal. Such purchasing culture among the consumers also hinders actualizing the transactability affordances:

“Especially in Nepal while buying agricultural products that are perishable, people like to see, touch, and feel the freshness of the vegetable. They are not used to buying such products online.”

Facilitating condition. Our study shows that creating digital culture was not easy because of resistance to change. But persistent training and awareness programs by showing how they can achieve their goal may lead to the adoption of digital tools and technologies. As one of the respondents from Bihani stated:

“... it is challenging to teach something new not only to the older generations but to everybody. But once, they learn, then it gets easier. There was no other option left, and they realized that this is the way of life now.”

Challenge: Mapping problem. The urban planning in major cities in Nepal is unstructured, resulting in inadequacy in mapping. Consequently, digital mapping does not corroborate with the actual geographical locations. DSEs such as Khaalisisi who are dependent on navigation find it challenging in identifying the customer or vendor locations.

Facilitating condition. Our study shows that DSEs need to be part of an ecosystem. They cannot work in isolation. For example, mapping organizations such as Kathmandu Living Labs are developing open street mapping based on real-time information from Nepal (see: <https://www.kathmandulivinglabs.org/>). DSEs in Nepal are gradually partnering with them and using their mapping systems.

5. Discussions

We started the paper by pointing out that there is a lack of theoretical and empirical studies covering the socio-technical aspect to show how DSEs can contribute to sustainable development. To contribute to this knowledge gap, we conducted a study in the context of Nepal. We specifically focused on the implementation of Digital Nepal Framework to assess the challenges of actualizing the digital affordances. By applying theory of affordances, we explained the mechanism by which DSEs can create economic, social, and environmental values.

We identified five digital affordances: *accessibility*, *communicability*, *transactability*, *manageability*, and *digitizability*. In the case of developing countries like Nepal, DSEs can actualize these affordances in areas such as access to market and finance, social engagement, waste management, and digitize information for government agencies.

Consequently, this can contribute to economic, social, and environmental dimensions of sustainable development.

Our findings show that while identifying the affordances, digital tools used by DSEs are not standalone artefacts, but a combination of various tools and technologies. For example, Khaalisisi uses a combination of digital tools and technologies, such as online platforms, navigation systems (e.g., GPS), Excel, and social media platforms like Facebook in the process of waste management. Similarly, R&D uses farmers credit card as a digital tool to make financing services more accessible to the farmers. To actualize the affordance of farmers credit card, the users or the borrowers need to have a smartphone or a simple mobile phone having the feature to be able to send and receive text messages. Hence, to understand the affordances, we need to consider the ecosystem of IT artifacts (Osmundsen et al., 2022).

Our analysis also shows that some digital tools and technologies can have more than one affordances, and the actualization of these affordances creates value in multiple ways. These multiple affordances are conceptualized as “bundles of affordances” (Strong et al., 2014; Volkoff & Strong, 2017, p. 4), and ensemble affordances (Thapa & Sein, 2018, p. 797) in organizational and societal context. For example, farmer’s credit card in our case demonstrates that this technology affords at least two affordances. First, it provides the affordance of accessibility, where it serves as a medium to provide access to finance to the local farmers who lack connections to the lending institutions and capabilities to use complex digital services. Next, it also provides transactability affordance, where DSEs are providing this service as a medium for banks and financial institutions to disseminate loans to the farmers.

Furthermore, in DSE’s context, we should not only identify the individual affordances but also collective and shared affordances. The collective and shared affordances can be identified by looking at the common or diverse patterns of group use of digital tools (Leonardi, 2013). For example, our study shows the instances of collective and shared affordances. All the five affordances we identified are collective affordances, meaning that the affordances are collectively perceived by the members involved in specific activity. Digitizability is one instance of collective affordance because multiple actors perceive the same possibility of recording the paper-based information in digital form. However, the two affordances (transactability and communicability) were shared affordances. For example, transactability affordance provides both access to finance and waste management. In case of transactability affordance, it

has been actualized both to disseminate loans by the financial institutions to the farmers, and for managing the waste. Likewise, communicability affordance has also been actualized for two motives: social engagement and waste management.

Our study also pinpoints several challenges DSEs face while perceiving and actualizing the affordances. For instance, the lack of awareness of digital affordances and capabilities for actualizing the perceived affordances by the government bodies may inhibit the potential of digital tools and technologies for contributing to bring the change in society. This might have an implication on the initiatives related to the Government of Nepal's *Digital Nepal Framework*. Furthermore, the DSEs are mainly located in urban areas and are confined to the users who have knowledge and access to digital platforms. This limits their possibility to serve the marginalized groups in remote and rural areas. As Toyama (2015) argues, digitalization amplifies the capabilities of those who already have the access to such technologies, and create a further digital divide between the haves and have nots.

6. Future research avenues

In this paper, we have presented various aspects of digital affordances for DSEs such as perception and actualization of digital affordances, challenges and facilitating conditions. However, the digital affordances in our findings are not exhaustive, hence there is possibility to explore more affordances by expanding the study in other areas as well. Future studies should consider the importance of creating and working within an ecosystem. Since DSEs are situated in a particular societal context, the role of engagement and collaboration at local level is important for DSEs to better contribute to problems that are grounded in that society. Furthermore, DSEs can create greater impact when they work in a network of public-private partnership, as the collaboration can complement their skills and expertise (Ibáñez et al., 2021; Pittaway et al., 2004; Roh, 2016). Therefore, future studies can explore the importance of public-private partnerships with people in DSE's contribution to sustainable development.

The paper only provides empirical evidence on how DSEs make use of digital tools and technologies based on affordances theory. However, DSEs are situated in institutional complexity (Greenwood et al., 2010; Thornton et al., 2012). In a situation where there is institutional pluralism, and different societal sectors become intertwined (Greenwood et al., 2011), understanding such institutional complexities becomes important in perceiving and actualizing

digital affordances (Faik et al., 2020). Therefore, future studies should also consider how other theoretical perspectives such as institutional logics can complement the theory of affordances.

Furthermore, the primary focus of this paper is on the positive aspects of digitalization by showing how DSEs are leveraging digitalization for contributing to sustainable development. However, digitalization also has its dark sides (Bonina et al., 2021; Karki & Thapa, 2021). The use of digital platforms sometimes may exacerbate the existing inequalities and exclusion in the society (Bonina et al., 2021) particularly by creating a digital divide and serving only the groups that have access and capabilities to use the technologies and excluding the rest (Wang et al., 2021). Future studies should be conducted to explore how the use of digital tools and technologies by DSEs can have negative consequences.

7. Conclusions

Our paper aims on exploring how DSEs, by leveraging digitalization, can contribute to sustainable development. We applied the theory of affordances in order to explore how DSEs perceive and actualize the action possibilities of digital tools to create social, economic, and environmental values. Following a qualitative interpretive case study, our paper identified five digital affordances DSEs have perceived and actualized, which are: *accessibility*, *transactability*, *communicability*, *manageability*, and *digitizability*. We explained how the actualization of these affordances can contribute to access to market and finance, social engagement, waste management, and creating digitized information. The study further identified several challenges DSEs face while perceiving and actualizing these digital affordances. The challenges we identified are lack of awareness of possibilities of digital tools and capabilities to actualize these possibilities especially among certain government agencies. This challenge might hinder the implementation of the government's *Digital Nepal Framework*. Other challenges are lack of digital culture, and poor mapping system. Moreover, our study shows various facilitating conditions which can address the challenges mentioned and enable the perception and actualization of digital affordances. We also suggested future research avenues such as the role of a public-private partnership with people in DSEs to better address the sustainable development challenges. Likewise, complimenting the theory of affordances with institutional logics perspective can provide a better understanding about the institutional complexities that DSEs are situated. Finally, the dark

sides of digitalization on DSEs activities should also be studied.

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