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Technology for Good: The Role of Technology in an "Everyone a Changemaker" World

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Abstract

The relationship between technology-based social innovation and social impact scaling has gained increasing attention in recent years. It has been recognized that technology has an intrinsic disseminative nature and can allow for reaching larger audiences more efficiently, and thus more beneficiaries. Therefore, the emphasis of research has primarily been on the replicability of social innovation and on an operational type of scalability. However, literature has fallen short of offering a comparable assessment of the relationship that instead may exist between technology and the achievement of system change, arguably the ultimate and most valuable outcome of social impact scaling.

Starting from this gap, this study aims to analyze the potential relationship between social entrepreneurship deploying technology and the achievement of system change. To accomplish this task, a conceptualization of system change, which is itself permeated by an aura of ambiguity in interpretation, is provided. In this study, system change is conceptualized as a co-evolving process relying on three levers: mindset shift, which acts at the individual level and cultural level, if happening at scale; market alteration, acting on new and existing market dynamics to enhance accessibility and inclusion; and institutional transition, which is concerned with the legislative, regulatory, and public policy level.

Therefore, the overarching objective developed by this study is to see if and how the use of technology-led social innovation has a positive relationship with the achievement of system change. Encompassing three different pathways, the specific hypotheses are that using technology in social entrepreneurship supports the shifting of societal mindsets; it alters established market dynamics, and it supports the achievement of changes at the institutional level.

By leveraging a quantitative approach on 817 survey responses of social entrepreneurs within Ashoka's network, this study will use cross-analyses as a preliminary empirical examination to illustrate that technology, and in particular social innovators deploying technology in their work, can act on each of the levers conducive to system change.

Introduction

Within the context of social innovation, an element that has gained enormous interest and relevance in the last decades is the disruptive role played by technology (Gupta et al., 2020). There is abundant exploration of how technology has brought enormous benefits to economic growth, at least in absolute terms, but has also created barriers to inclusive growth, thus risking fostering already unbearably high social inequalities (Calderini et al., 2021). Still, the adoption of technology in social innovation can assist innovators and entrepreneurs in their original tasks by supporting them through new and more efficient processes. In this sense, current literature has devoted considerable attention to the ways technology has facilitated dissemination and scaling processes, enabling social innovators to reach wider audience pools (Millard et al., 2014; Maiolini et al., 2016; Kedmenec et al., 2019; Gupta et al., 2020). The same degree of attention has not been paid to analyzing the role of technology in achieving system change, and certainly not in empirical terms. Despite conceptual variations, there is a general understanding that systems are changed through interconnected adjustments within self-reinforcing domains of technology, the economy, institutions, behavior, and cultural systems (Rotmans et al., 2001).

This is the context within which this study operates. In doing so, it aims to shed light on a new and emerging entrepreneurial genre, social-tech entrepreneurship, characterized by the coexistence of social impact and the use of technology while pursuing a blended value approach. The data in this study comes from the social entrepreneurs in the Ashoka network who took part in the 2021 Ashoka Global Fellows Study. By adopting a holistic approach, this study sets out to empirically analyze the potential relationship between technology and system change. In doing so, it will attempt to provide a conceptualization of system change, built upon the analysis of several interpretations.

Objectives

The domains of social impact scaling and that of technology within social innovation have commonly been examined separately in the literature (Alijani and Wintjes, 2017; Clark et al., 2012; Scheuerle and Schmitz, 2016; Turker and Ozmen, 2021).

This study sets out to use the replicability and dissemination of social innovations as a means to an end. Replicability of social innovations is a tool to achieve broader systemic change, and therefore cannot be considered as the ultimate goal of technology-driven social innovations, nor of social innovation itself. Analyzing the role of technology merely in terms of the replicability of innovation is an inexhaustive and unfinished task. Similarly, examining this relationship in purely theoretical terms is an indispensable but certainly preparatory exercise, which needs to be complemented by empirical evidence to create a complete and structured model that can be of value to many actors. Accordingly, the above considerations pave the way for the overarching research question this research article aims to address: *What is the role of technology-driven social innovation in fostering system change?*

In addressing the research question, this study builds upon the analysis conducted by scholars and practitioners over the last decades, according to which technology-driven social innovations relate positively with operational scalability and replicability of innovation (Millard et al., 2014; Maiolini et al., 2016; Kedmenec et al., 2019; Gupta et al., 2020).

The main goal is to investigate the influence of technology adoption in social innovation and advancing social impact. The study then aims to decouple the concept of system change by giving it three different levers that are grounded in the analysis conducted by Nicholls et al. (2012). The three levers building towards systems change are the following:

- **Mindset shift**: which occurs at the level of the individuals, both beneficiaries and non-beneficiaries of social innovations, to affect a mindset change that leads individuals to think differently about social and environmental issues. This makes them active promoters of change which further stimulates the proliferation of societal mindset shifts (Hubert, 2010; Nicholls et al., 2012). If mindset shift occurs at scale, it changes culture and we can begin to talk about cultural shift.

- **Structural alteration**: this takes place at the level of markets and market-based economic systems, by stimulating change in how socio-economic relationships are created and governed, so that new incentives lead to more transparency, accessibility and social transformation. The goal is to favor the inclusion of previously marginalized or disenfranchised socio-economic groups (Heiskala, 2007; Mazzucato, 2015).

- **Institutional transition**: this is governed by changes at the regulatory, legislative, and public policy level. It entails the effective adoption and implementation of a theory of transformative change within the legislative and institutional network that regulates and governs human life (Mazzucato, 2016; Misuraca et al., 2019).

Literature Review

System Change

The most significant characteristic of systems thinking is that a system is more than the mere sum of its parts, which are interrelated to form more complex structures (Meadows, 2008; Seiffert and Loch, 2005). Seeing ‘wholes’ is thus the foundation of systems thinking: it means studying complete systems inside a boundary, while comprehending their components, functions, and interconnections (Senge, 1990).

The emphasis on social impact scaling in social innovation studies frequently reflects a product and consumer orientation, which is usually understood as diffusion or replication of a particular product or service. System change, instead, stems from the idea that large-scale change in a social system requires adjustments to laws, cultural beliefs, and connections on many institutional levels. Scaling social impact to bring about larger-scale change is a more multifaceted and challenging process than merely disseminating a new product or concept. In fact, it is widely agreed in the literature that innovations are not isolated events and that they should be considered in the context of co-evolving systems (Freeman and Soete, 2000). For this reason, it is critical to consider how social enterprises and other change agents can intentionally influence social systems and institutions through their social innovations.

Technology and Social Innovation

In recent years, the nexus between social and technological innovation has gained traction. An increasing number of scholars analyze the dynamics between the two and critically study the synergies and differences between them to maximize the benefits of such a relationship. Nevertheless, scholars and practitioners have only relatively recently started examining the potential of technological products to contribute to solving societal challenges (Seidel et al., 2013), as well as analyzing the best practices or particular skills that might be necessary to develop technology-enabled social innovations (Schweitzer et al., 2015). Alijani and Wintjes (2017) argue that the interaction of social and technological innovations supports the co-evolution of social and technical developments, which can in turn speed up social progress. Technological innovation is frequently considered a driver of economic development, with several benefits expected. Social innovations, on the other hand, highlight the social impact of change, such as wellbeing, inclusiveness, and welfare. Such a nexus can lead to virtuous interactions, leading to transformative change (Alijani and Wintjes, 2017, 3).

Arena et al. (2018) argue that technology innovation, defined as using technological developments to create products, services or processes that can help solve a social problem, is becoming increasingly important in social innovation. In this light, social innovation not only complements, as it was initially envisaged (Pot and Vaas, 2008), but also advances technological innovation. This supports the formation of a virtuous cycle in which technological innovation becomes a necessary element for implementing social innovation. However, because the interaction between the technological and social domains cannot be regarded as a one-way linear link, the relationship between technology and social innovation remains complicated and difficult to untangle (Arena et al., 2018). In a recent article, Calderini et al. (2021) argue that a new entrepreneurial genre is emerging, named social-tech entrepreneurship. The authors identify the technological, knowledge-intensive nature of the new enterprise as one of its distinguishing qualities, making such ventures remarkably close to the classic definition of high-tech start-ups. A key distinctive feature of this enterprise though is hybridity, or blended-value mission, created by the coexistence of social impact and business objectives (Batillana et al., 2012).

Starting from the considerations on social-tech entrepreneurship, the article will expand on this theme by devoting more attention to the still understudied linkages between technology-driven social entrepreneurs and the attainment of system change.

Methodology

This study relied entirely on the use of primary data collected through a survey. The aim of the survey was to analyze cross-sectionally how social innovators within the Ashoka network operate. The questionnaire was divided into four sections, each with a thematic area. The most relevant section for the purposes of this study was *Part two: The impact of your idea*, and its sub-section *2.1. Technology and humanity*. In particular, the sub-areas of interests concerned the scalability questions related to three focus areas regarding:

- Mindset shift related to societal and cultural norms;
- Structural alteration in market-based economic systems;
- Institutional transition at the regulatory and legislative level.

Regarding such interpretations of system change, the survey was designed considering the valuable insights that emerged from the literature in terms of mindset shift (Hubert, 2010; Nicholls et al., 2012), changes in market-based economic systems (Heiskala, 2007; Mazzucato, 2015), and alterations in the institutional and legislative sphere (Mazzucato, 2016, 2018; Misuraca et al., 2019). The survey was administered to 3,109 Ashoka Fellows in an online format through Qualtrics between March and April 2021, collecting a total of 817 responses, with a response rate of 26.3%, from social entrepreneurs based in Europe, North and South America, Africa, East and South Asia, and Middle East and North Africa (MENA). For this reason, the survey was made available in a wide range of languages, to adapt to the needs of the social innovators and ensure a smooth compilation of the questions. All responses used in this study were aggregated and anonymized.

Findings

A first look at the survey variable referring to the shift in societal mindsets that social innovators aim for, revealed two relevant indicators (see table 1 and figure 1). A majority of the social entrepreneurs in the sample (88%) reported that they aim to encourage a shift in thought, compared to only 43% who reported that they base their solution on communication strategies meant to reach a large number of people. The results are not surprising, as an intrinsic characteristic of social innovations is that of reshaping mindsets (Hubert, 2010) and thus influencing how people perceive and think about societal issues.

Mindset shift	Observations	Mean	Std Dev	Min	Max
Encourages people to think differently	817	.8641371	.3428528	0	1
Based on communication strategies	817	.4222766	.4942247	0	1

Table 1: Mindset shift descriptive statistics

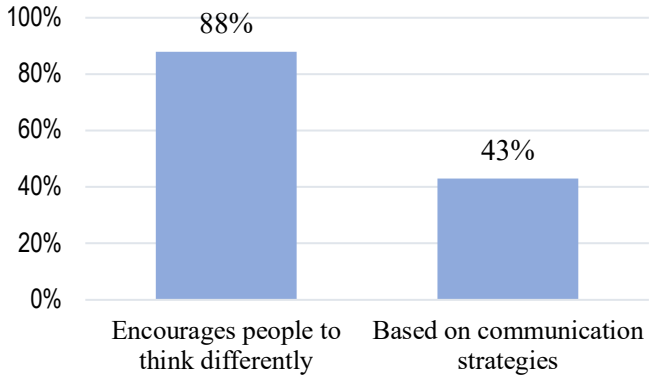

Figure 1: Mindset shift - descriptive statistics

The variable referring to structural alterations in market-based economic systems influenced by social entrepreneurs incorporated seven relevant indicators examined in the survey (see table 2 and figure 2). The figures below testify to a rather homogeneous dispersion of answers provided by social innovators: 58% of entrepreneurs who improved market transparency, thus reducing information asymmetries (e.g., price and product information); 60% improved the accessibility of existing markets by guaranteeing trade opportunities to marginalized groups; 71% created a new market that allows people to trade or access a product or service they previously could not; 71% created value for a product or service where value previously did not exist; 68% generated new sources of income for marginalized people; 69% led to changes in the code of conduct or official policy of a large organization or industry; and 67% encouraged for-profit organizations to modify their business model to better respond to societal and environmental changes.

Structural alteration	Observations	Mean	Std Dev	Min	Max
Improved market transparency	584	.5753425	.4947147	0	1
Improved the accessibility	573	.600349	.4902546	0	1
Created a new market	601	.7071547	.4554471	0	1
Created value for a product or service	598	.7006689	.4583485	0	1
Led to changes in the code of conduct	618	.6796117	.4670038	0	1
Encouraged to modify their business model	618	.6893204	.4631467	0	1
Generated new sources of income	611	.6710311	.4702236	0	1

Table 2: Structural alteration descriptive statistics

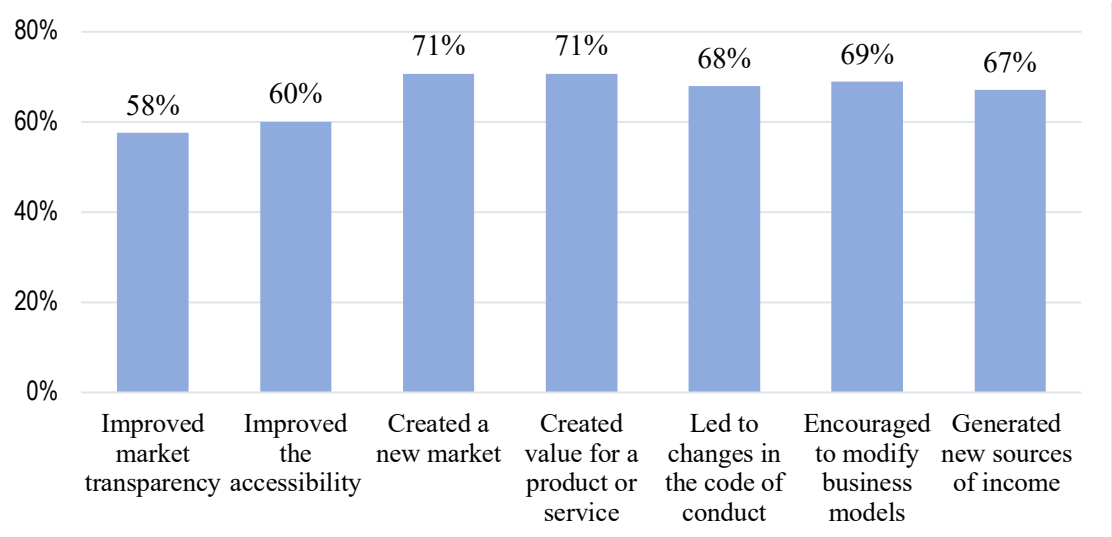

Figure 2: Structural alteration - descriptive statistics

The last system change variable considered refers to institutional transition fostered by social innovators. As discussed, this is linked to the legal, legislative, and regulatory frameworks in which social innovators operate. From the figure below, it is visible that social entrepreneurs report a stronger influence on effective policy advice than actual policy implementation. If 81% of Ashoka Fellows in the sample report having effectively advised policymakers as experts and 77% provided them with previously missing evidence to inform the development of legislation, a slightly lower proportion convinced governments to allocate funds to a specific cause (74%) and either achieved legislative change or influenced government policy (72%).

Institutional transition	Observations	Mean	Std Dev	Min	Max
Advised policymakers	666	.8138138	.3895494	0	1
Provided evidence	654	.7691131	.4217227	0	1
Convinced gov to allocate funds	636	.7358491	.4412271	0	1
Achieved legislative change	718	.7158774	.4513099	0	1

Table 3: Institutional transition descriptive statistics

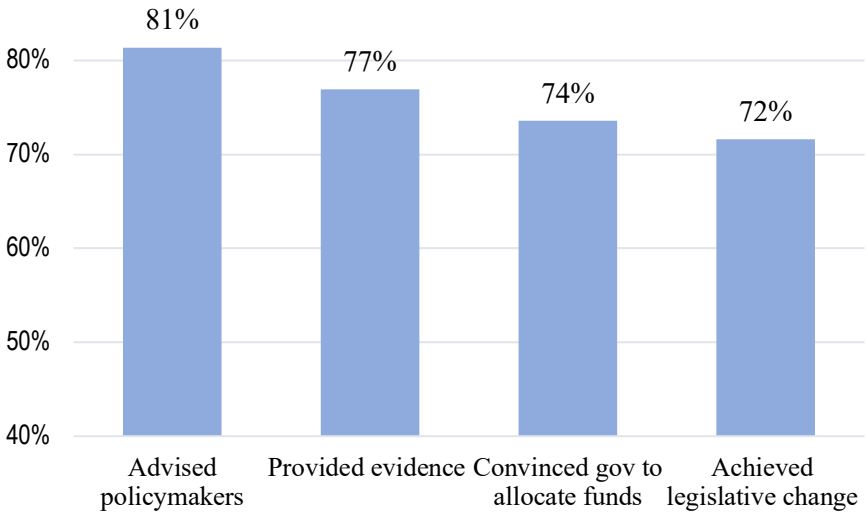

Figure 3 - Institutional transition descriptive statistics

The technology variable employed in this study refers to the use of technology itself, as social entrepreneurs were asked whether they employ technology within their work. The definition of technology referred to advanced, cutting-edge frontier technologies and artisanal, do-it-yourself artefacts that can display a traditional and non-mechanical character. It did not refer to the use of computers and mobile phones to carry out the social innovators' work. As it is possible to ascertain from the figures, a higher proportion of social innovators reported the use of technology in their work (82%) compared to non-use (18%). Figure 4 depicts the main

purposes behind the use of technology on the side of social entrepreneurs: 55% of respondents report that they use technology to increase participation of certain stakeholder groups and to address social needs, respectively, while 24% of respondents work on making sure that technology works for humanity (e.g., regulatory frameworks, digital human rights, mitigation of unintended consequences).

	Observations	Mean	Std Dev	Min	Max
Technology use	775	.8232258	.3817238	0	1

Table 4: Technology use - descriptive statistics

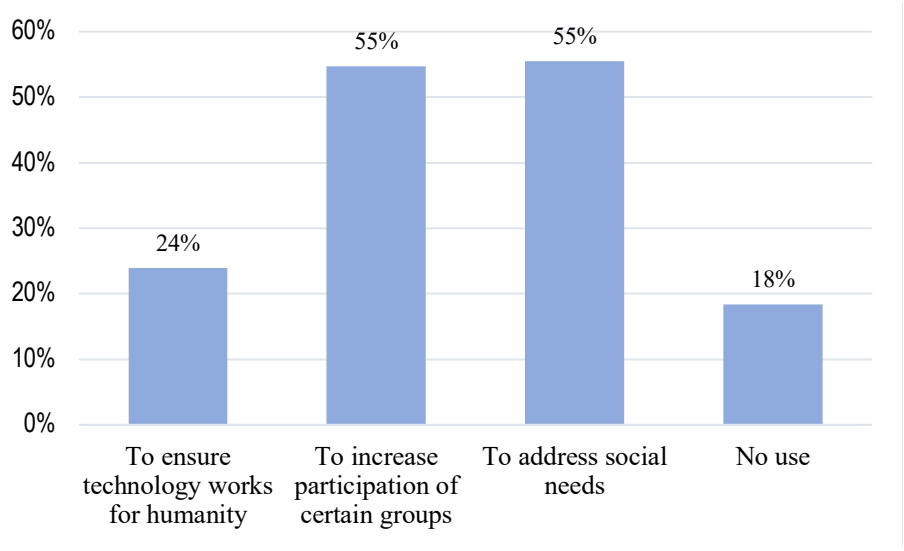

Figure 4: Technology use- descriptive statistics

Cross-analysis of Variables

This section focuses on the results of the cross-tabulations performed among the variables previously presented. Each cluster of dependent variables – the *mindset shift*, *structural alteration*, and *institutional transition* variables, broken down by their respective relative indicators – is graphically represented by grouping it against the technology variable, which differentiates between social innovators who report use of technology and those who do not. All of the analyses performed are reported in relative terms.

Figure 5 focuses on the mindset shift aspect. The first indicator, *encouraging people to think differently about an issue* does not find significant differences between social entrepreneurs who use technology and those who do not. This may not be a surprising result, as all social innovations are thought of as intrinsically devoted to reshaping mindsets by nature (Hubert, 2010). Such an inherent feature refers to social innovation in itself, rather than being connected to the use of technology. The same, however, cannot be said of the strategies based on communication and campaigning focused on reaching large numbers of people. These are vastly more popular among social innovators using technology (46% of respondents compared to 28%). This result is also not surprising, as it has been widely documented that technology

fosters a disseminative and educational character through its ability to reach wider audiences (Kedmenec et al., 2019).

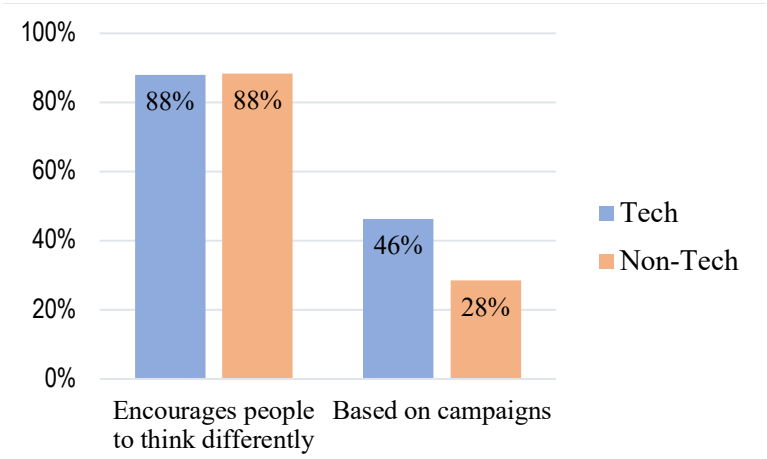

Figure 5 - Mindset shift, tech vs non-tech comparison

Figure 6 depicts the results of the analysis on the second variable, *structural alteration through market changes,* and its indicators. This cross-analysis yields some relevant findings: the data show that significantly more social innovators using technology report having an impact in each of the indicators related to changes in market systems—from creating new markets that allow people to trade or access a product or service they previously could not (58% compared to 36%) and modifying existing business models to better respond to societal and environmental changes (57% compared to 38%), to increasing market transparency (46% compared to 27%) and accessibility (46% compared to 33%). Social entrepreneurs using technology in fact report being better able to alter long-established market structures towards more inclusive and accessible market-based dynamics in favor of marginalized socio-economic groups, thus potentially disrupting the conventional understanding of today's market mechanisms.

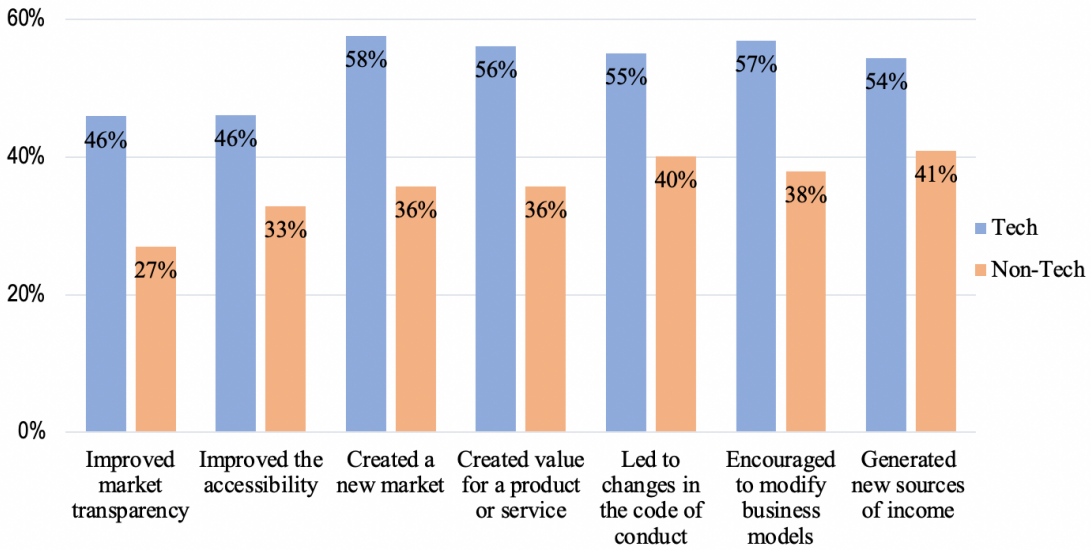

Figure 6: Structural alteration, tech vs non-tech comparison

Lastly, figure 7 depicts the analysis concerning the *institutional transition* variable and its indicators. This analysis returns results comparable to the structural alteration ones. Across all of the indicators, social innovators using technology report higher levels of impact than their non-technology driven peers: from effectively advising policymakers (70% compared to 58%) to convincing governments to allocate funds for a specific cause (60% compared to 51%), and to providing evidence to policymakers (66% compared to 51%), highlighting that technology may serve as a faithful ally in the provision of evidence-based policy advice.

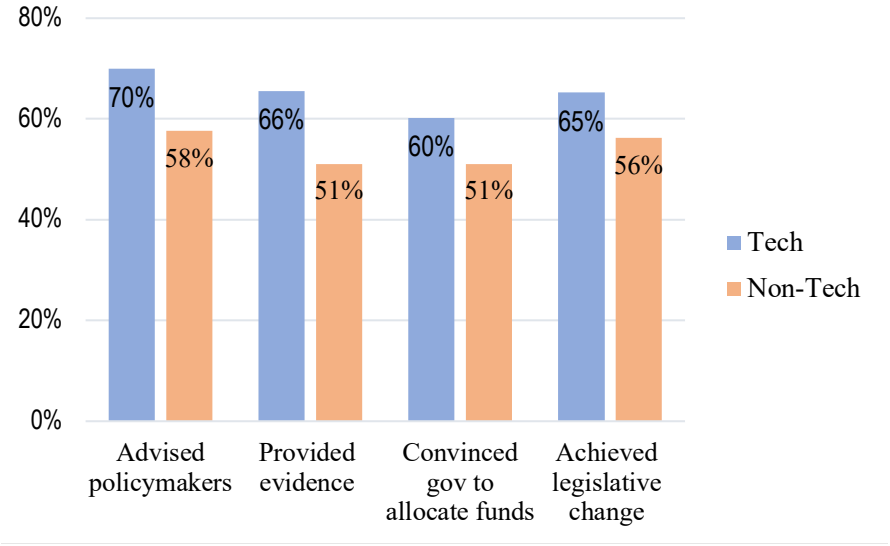

Figure 7: Institutional transition, tech vs non-tech comparison

Discussion and Conclusions

The results obtained from the first cross-analysis concerning the shift in social mindset confirm what is widely discussed in the literature (Millard, 2014; Kedmenec et al., 2019). The use of technology in social innovations seems to find a positive relationship with communication strategies and campaigns by social innovators. As predicted by the literature, these can be useful for stimulating replication of the innovation by external actors, as well as to disseminate the innovation itself. Through the communication campaigns, social entrepreneurs can bring social issues closer to the general public and incentivize more individuals to get engaged. By encouraging people to think differently about an issue and make them aware of it in the first place, social entrepreneurs can encourage new advocates who may also in turn convince others to change their views. The use of technology is a valuable ally in achieving this.

The second cross-analysis depicted a potential positive relationship between the use of technology by social innovators and their ability to alter the dynamics governing market-based economic systems and the structures underlying market interactions. The results show that social innovators using technology are potentially better able to foster such a change by influencing all of the analyzed levels of structural alteration on the market. Among other factors, technology can drive social innovation by democratizing information and knowledge, making it more accessible to market players. This has positive implications for the transparency

of market-regulated transactions which can become more unbiased and fairer, and by creating market opportunities for previously marginalized groups.

Finally, the last cross-analysis highlights the potential positive relationship between technology-driven social enterprises and changes at the institutional level. Technology allows for more robust evidence-based recommendations based on data analysis. Data is already widely used to create social innovations and inform decisions by social and non-social entrepreneurs (Dunlop et al, 2007; Trout, 2014; Nepo, 2018). This practice can therefore also be used to create more robust institutional dynamics, enabling more rigorous and systematic analytical processes that culminate in informed public policy recommendations and action. Greater capacity to design effective policies, more effective program execution, better performance monitoring and consequently more meaningful results for people, are all benefits of well-informed decision-making processes (Head, 2013). Indeed, evidence-based foresight practices can ensure that decision-making is reliable and fit for the future (Van Woensel, 2021) and technology can support in this.

Overall, the data from the 2021 Ashoka Global Fellows Study indicate that technology can be a factor advancing the system change work of social entrepreneurs. Even though technology is used to different degrees by the Ashoka Fellows, the ones making use of technology also report stronger effects on system change levers identified—mindset shift, structural alteration of market-based systems, and institutional change.

The findings presented in this study are preliminary results that will be used to guide further empirical research. Because the cross-sectional analysis of the variables does not yield a statistically significant model, more robust models must be used to empirically examine the existing relationship between technology and system change. We hope that this article is a useful contribution towards future research that aims to answer questions about technology-based social innovation and system change.

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