Social Media Business Networks and SME Performance: A Rural-Urban Comparative Analysis

Tiwasing, P.

DOI 10.1111/grow.12501
ISSN 0017-4815
ESSN 1468-2257

Publisher: Wiley

Received: 9 February 2021 | Revised: 7 May 2021 | Accepted: 8 May 2021

DOI: 10.1111/grow.12501

ORIGINAL ARTICLE

growth and change WILEY

Social media business networks and SME performance: A rural–urban comparative analysis

Pattanapong Tiwasing

Centre for Business in Society (CBiS), Faculty of Business and Law, Coventry University, Coventry, UK

Correspondence
Pattanapong Tiwasing, Centre for Business in Society, Faculty of Business and Law, Coventry University, Coventry CV1 5DL, UK.
Email: pattanapong.tiwasing@coventry.ac.uk

Abstract

Social media business networks provide small- and medium-sized enterprises (SMEs) with a modern platform to network, resulting in improved business performance. However, rural SMEs are less likely to access these networks and often underperform urban counterparts. This paper provides a rural–urban comparative analysis of business performance across SMEs for both members and non-members of social media business networks. Empirically, the analysis draws on data of over 13,000 SMEs from the 2015-UK Government's Small Business Survey. Inverse Probability Weighting is used to control for selection bias of firms selecting into a location and business network and for variations in business characteristics. The results reveal that rural SMEs that are members of social media business networks tend to register higher turnover and seek to grow sales compared to rural and urban SMEs that are non-members. For turnover, rural firms that are members of these business networks perform as well as urban SMEs that are members. However, for sales growth, they underperform urban counterparts. Therefore, the development of SMEs' performance in rural areas requires enhanced online business support environments, improved digital infrastructure and connectivity, the creation of online co-working spaces, and increased digital and technological skills.

1 | INTRODUCTION

In the digital era and in particular, during the COVID crisis, social media networks (e.g., LinkedIn, Facebook, and Twitter) are increasingly popular platforms for people and businesses (Ainin et al., 2015), providing new mechanisms for communication, interaction, and collaboration (Quinton & Wilson, 2016). Users can generate content and connect with people through many-to-many, one-to-one and one-to-many connections (Ainin et al., 2015; McCann & Barlow, 2015). Social media networks are mainly free (Ainin et al., 2015; Kaplan & Haenlein, 2010), and they are not only used for communicating and sharing information socially, but also for selling, advertising, and marketing for businesses (Ainin et al., 2015). The use of social media networks has also provided a modern networking approach for many businesses, requiring less time for business interactions and building business relationships (Quinton & Wilson, 2016). Therefore, social media networks can generate a fluid membership constituency depending on the networks' purposes and interests (Cenamor et al., 2019; Quinton & Wilson, 2016), and subsequently the emergence of 'social media business networks'.

Social media business networks are business oriented social media networking sites that aim to aid professionals and form a list of connections (Chang et al., 2017). These online business networks offer an easily accessible route to building business relationships and accessing essential external resources/information from business partners within the networks (Pettersen, 2016). They have become an integral part of marketing strategies to improve business performance and growth for many businesses, including Small- and Medium-sized Enterprises (SMEs) (Naudé et al., 2014). Chang et al. (2017) point out that such professional groups, via social media networks, create online-sharing platforms and co-working spaces that firms can use to interact with each other based on their specific interests. In addition, Quinton and Wilson (2016) emphasise that being members of social media business networks (e.g., LinkedIn) can quickly generate a trusted environment within the networks, resulting in business engagement, collaborative problem solving, and business performance enhancement.

In the UK, BIS (2015) estimated that only 36% of SMEs have a social media profile, of which 28% are on Facebook, followed by Twitter (19%) and LinkedIn (18%). Similarly, Mack-Smith et al. (2016) report that only 20% of small businesses use social media to develop their business' image or market products, which is very low compared to large firms (73%). Wilson et al. (2018) also reveal that SMEs, especially those located in rural areas aim to make more use of social media for their future collaboration, communication, and business growth. However, rural SMEs may be disadvantaged in accessing social media business networks compared to urban counterparts due to poor internet connection and geographical remoteness (Phillipson et al., 2019; Townsend et al., 2016). Also, rural business owners are concerned about using online social networking due to the time commitment and skills requirement (Townsend et al., 2016). With these issues, rural SMEs are distanced from online networking activities, leading to lower business performance compared to urban SMEs (Lekhanya, 2018). Therefore, participating in social media business networks could potentially help develop business support environments and online business engagement to enhance business performance in rural areas.

Although previous studies have shown that social media and online communication platforms have created significant opportunities for rural businesses (Lekhanya, 2018; Townsend et al., 2016; Wilson et al., 2018), to date, little attention has been paid to the relationship between social media business networks and SME performance, especially in the context of rural–urban comparative analysis. This paper, therefore, attempts to examine differences in business performance between rural and urban SMEs that are members and non-members of social media business networks. This paper focuses on two main research questions:

1. Does membership of social media business networks make a difference to business performance for both rural and urban SMEs?
2. Can membership of social media business networks enhance rural SME performance?

To answer these research questions, the analysis draws on large cross-sectional data of 13,876 SMEs from the Longitudinal Small Business Survey (LSBS) for 2015 commissioned by the UK Department for Business, Energy and Industrial Strategy (BEIS). Treatment Effect Analysis called Inverse Probability Weighting (IPW) is applied to control for selection into a rural location and business network, and for variations in business characteristics before comparing business performance between the four location-network membership classifications: (1) urban SMEs that are non-members of social media business networks, (2) urban SMEs that are members, (3) rural SMEs that are non-members, and (4) rural SMEs that are members.

To the best of the author's knowledge, this is the first paper that explores the comparative analysis of business performance between rural and urban SMEs that are members and non-members of social media business networks. Based on the rich dataset and quantitative analysis, the results of this paper provide a comprehensive evidence-based response to debates regarding the advantages of using social media networks as a new platform for business networking activities, to enhance business performance and economic growth in rural areas. This key evidence should be beneficial to policymakers, business support providers and academic researchers to help unlock digital potential for the rural economy and improve online business support environments.

This paper is structured as follows: Section 2 discusses the theoretical framework. Section 3 reviews relevant literature. Section 4 details the secondary data used and the methodology. Empirical results are discussed in Section 5. Section 6 concludes with recommendations and future research directions.

2 | THEORETICAL BACKGROUND

The importance of business networks has been recognised by many recent studies as an opportunity for SMEs to gain essential external information and build social capital (Naudé et al., 2014; Pettersen, 2016; Phillipson et al., 2019). According to Bourdieu and Wacquant (1992, p. 119), social capital is defined as 'the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition'. Social capital informs the importance of how to create social networks that provide the opportunities for people and their networks with positive economic and social benefits (Lin et al., 2001; Putnam, 2000).

To create social networks, Putnam (2000) has presented two forms of social capital: 'bonding social capital' and 'bridging social capital'. The term 'bonding' refers to connections between people who have close relationships (i.e., family members, close friends, and neighbours) (Williams, 2019). Granovetter (1973) describes these relationships as 'strong ties' which are often considered as the building blocks for relationships with broader social networks. While the term 'bridging' refers to the ability to create social networks that link heterogeneous groups of people with different backgrounds (Naudé et al., 2014). These networks can be linked to 'weak ties', termed by Granovetter (1973), which largely refers to the connections with formal organisations and business support agencies such as universities, research centres, and government organisations (Maioli et al., 2020). These connections provide positive effects on the diffusion of information and knowledge (Granovetter, 1973; Naudé

et al., 2014), fostering economic value and performance for those businesses within their networks (Stephen & Toubia, 2010).

In the digital era, social networks have often been used synonymously with social media networks in the popular press (Naudé et al., 2014) since social networks have now incorporated online networking activities (Quinton & Wilson, 2016). Social media networks are commonly used via online social networking sites such as LinkedIn, Facebook, and Twitter (Anin et al., 2015). They provide businesses with a ready tool to support the activities of social networks and networking for better information and knowledge flow and building business relationships and collaborations (Williams, 2019). Also, the use of social media networks can extend business reach for both types of ties formed within social networks (Quinton & Wilson, 2016) since users can connect with people through many-to-many, one-to-one and one-to-many connections (McCann & Barlow, 2015). Therefore, social media networks can offer accessible and effective online platforms for businesses to create specific strategic networks (Möller & Svahn, 2009; Paniagua & Sapena, 2014). Also, the interaction between businesses through social media networks can build a fluid membership constituency with members having the same interests, leading to the emergent online business networks (Quinton & Wilson, 2016) called 'social media business networks'.

Social media business networks can be used as a catalyst to help improve SMEs capability and accessibility to resources which lead to effective business solutions through the networks. Drawing from the Resource-Based View perspective, Barney et al. (2011, p. 1,300) define the resources as 'bundles of tangible and intangible assets, including a firm's management skills, its organisational processes and routines, and the information and knowledge it controls that can be used by firms to help choose and implement strategies'. SMEs can enhance their tangible and intangible resources through participation in social media business networks and online networking activities (Quinton & Wilson, 2016). Quinton and Wilson (2016, p. 21) emphasise that 'membership of and participation in a business social media network provides a trusted environment with a potentially global reach through which nearly immediate contacts can be formed as a base for future business collaboration'. In particular, a professional grouping such as LinkedIn acts as a trusted filter to quickly assess the credentials and extent of a potential contact expediting the relationship initiation (Chang et al., 2017), requiring less time to develop trustworthiness compared with other environments (Quinton & Wilson, 2016). Consequently, membership of these online networks can enhance their business performance by sharing the same business interests and goals, identifying business solutions, and collaborative problem solving (Cenamor et al., 2019; Chang et al., 2017; Quinton & Wilson, 2016).

Membership of social media business networks can be seen as both bridging and bonding network-members (Williams, 2019) that may come from different business sectors and geographical locations (Cross et al., 2005). The association with online business networks could therefore potentially address the geographical disparity in knowledge creation and help improve business support environments (Pettersen, 2016; Qian et al. 2013), particularly in rural areas. In terms of rural perspectives, online business networks are essential for rural businesses to overcome geographical remoteness and digital disadvantage and to build social networks (Roberts et al., 2017; Townsend et al., 2016; Warren, 2007). Rural businesses can also use these online business networks to help connect disparate businesses and expand their business reach (Moyes et al. 2012; Townsend et al., 2016). Bosworth (2012) also emphasises that a networking approach is more important in rural than urban regions since rural business owners traditionally demonstrate high levels of commitment to their local community. However, such rural firms may be distanced from participating in online networking activities, including social media business networks, since rural locations are significantly subject to 'digital exclusion', which is defined by Warren (2007, p. 375) as 'a situation where a discrete sector of the population suffers significant and possibly indefinite lags in its adoption of information and communication technologies

(ICT) through circumstances beyond its immediate control'. Thus, due to digital exclusion and inferior digital infrastructure as well as poor broadband connectivity, rural SMEs may find it difficult to access online networking activities and develop online business support environments, and subsequently experience lower business performance (Lekhanya, 2018; Phillipson et al., 2019; Wilson et al., 2018). Building on the above theoretical background, Figure 1 summarises the theoretical framework.

Overall, social media is considered as an accessible and effective means for networking activities and building social networks. Thus, using social media as online business networks can potentially help improve business support/advice environments and create positive business performance and economic growth, especially for rural SMEs. To date, there is no empirical study focusing on the relationship of social media business networks and SME performance for rural and urban SMEs as a comparison for both members and non-members of these online networks. Hence, this study is important because establishing the digital knowledge of rural SMEs through participation in social media business networks can suggest key solutions to improve online business activities in rural areas and address the rural–urban digital divide. Membership of such online business networks can enhance opportunities for a rural firm's performance and survival plus overcome the geographical limitation in terms of accessing online support and resources. This will help sustain the existing businesses and promote new membership of online business networks. The relevant literature and hypotheses are provided in the following section.

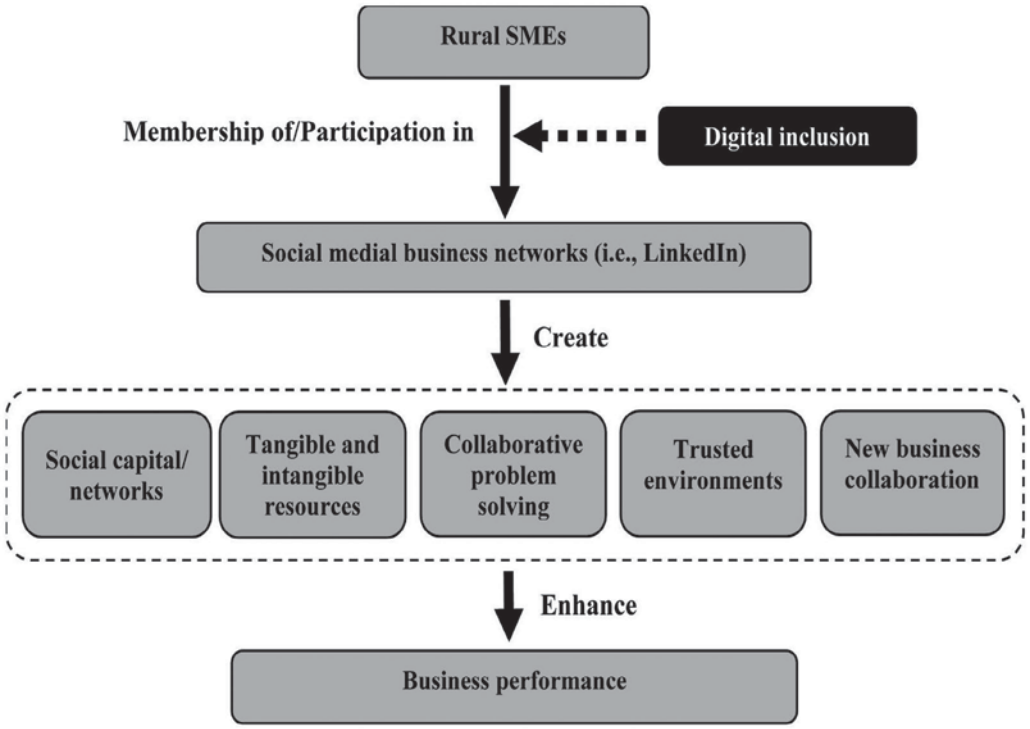

FIGURE 1 Theoretical Framework

3 | LITERATURE REVIEW: SOCIAL MEDIA BUSINESS NETWORKS, RURAL LOCATION, AND SME PERFORMANCE

For the digital-era economy, the relationship between social media and businesses has been highlighted by many studies. Previous research has considered the impact of social media on business transformation (Aral et al., 2013), while others have examined the link between the use of social media and business value (Ainin et al. 2015; Franco et al., 2016; Paniagua & Sapena, 2014; Vásquez & Escamilla, 2014). However, there is little empirical evidence on the association between social media and its business networks and business performance, especially for rural SMEs.

In business, individuals or organisations can use social media business networks to connect with various partners such as customers, suppliers, trade associations, and government agencies in accessing critical resources to improve business performance (Quinton & Wilson, 2016). They are considered as a powerful tool to interact with others on a massive scale, on one-to-many and many-to-many modes (McCann & Barlow, 2015). In particular, social media business networks, such as LinkedIn, mainly provide a low-cost method of social networks for SMEs (Kaplan & Haenlein, 2010) to manage knowledge, share information, interact with partners and improve performance (Ainin et al., 2015). For example, Vásquez and Escamilla (2014) discuss how businesses create better practices in using social media networks for the strategic marketing communication of Mexican SMEs to improve competitiveness. Likewise, using the data from the US and Turkish SMEs, Öztamur and Karakadılar (2014) report that the social media networks have become an important part of marketing strategies to communicate with target consumers, aiming to increase sale performance. Ainin et al. (2015) also found that using social media networks, especially Facebook, have a positive contribution to the financial performance of SMEs in Malaysia. Similarly, Franco et al. (2016) reveal that using social media networks can create effective mechanisms to enhance business performance and achieve competitive advantages for SMEs in Portugal. In addition, Quinton and Wilson (2016) found that participation in social media business networks, particularly LinkedIn, resulted in enhanced business performance for the wine industries. Using the LSBS data, Maioli et al. (2020) also report that being a member of social media-based business networks is positively associated with English SMEs' productivity.

In a rural context, social media business networks and online networking activities are crucial for rural businesses to overcome problems of remoteness (Roberts et al., 2017; Townsend et al., 2016). However, rural SMEs are often reported to have poor internet connections and poor digital infrastructure (Philip et al., 2017; Townsend et al., 2016). Rural SMEs also have lower levels of digital technology adoption in comparison to their urban counterparts due to digital and technological skills limitations (Warren, 2007; Wilson et al., 2018). Therefore, rural businesses may find it harder to access social media business networks and to develop their networking activities compared with urban SMEs (Lekhanya, 2018; Phillipson et al., 2019).

Previous studies have shown that rural SMEs are less likely to use digital technology, including social media business networks, than urban businesses due to the urban-rural digital divide (Lekhanya, 2018; Onitsuka, 2019; Philip et al., 2017; Warren, 2007). For example, Galloway and Mochrie (2005) report that rural firms have lower levels of digital competence than those in urban areas because of ICT supply and demand failures. Similarly, Warren (2007) also reveals that rural areas are historically found to have lower levels of provision and adoption of broadband services and digital technologies in comparison with their urban counterparts. Lekhanya (2018) also mentions that poor access to technology and infrastructure and lack of broadband connectivity result in deficiencies in networking for rural SMEs in South Africa. Using the empirical evidence from Japan, Onitsuka (2019) also finds that more rural than urban businesses report difficulties in establishing collaborative work and online networking with external partners due to the issue of internet connectivity.

Recent studies have shown that social media business networks and online communications enhance business performance in rural areas (Jones et al., 2015; Wilson et al., 2018). For instance, Jones et al. (2015) also provide empirical evidence on the positive impact of social media networks on the sales performance of SMEs in a rural region in the US. Using the survey data of 871 UK SMEs, Wilson et al. (2018) report that rural SMEs aim to use social media networks for their future collaboration, marketing, and business growth. They also emphasise that having a slow internet connection clearly has a negative impact on the operation and performance of these rural businesses. Therefore, using social media platforms could potentially help improve business support and advice environments in rural locations and minimise gaps in business performance between rural and urban SMEs.

In summary, the evidence above highlights that social media networks and their business networks can improve SME performance. However, rural SMEs are less likely to be members of social media business networks due to digital exclusion and poor digital infrastructure, potentially resulting in lower business performance. Thus, participating in social media business networks can enhance rural SME performance. This also suggests that locations are significantly relevant to participation in online networking activities. To analyse the impact of membership of social media business networks on business performance, the analysis should therefore consider the rural–urban location. This paper will therefore examine differences in business performance between rural and urban SMEs for both members and non-members of social media business networks, the hypotheses are:

Hypothesis 1 *Rural SMEs that are members of social media business networks can perform better than urban SMEs that are non-members.*

Hypothesis 2 *Rural SMEs that are members of social media business networks can perform better than urban SMEs that are members.*

Hypothesis 3 *Rural SMEs that are members of social media business networks can perform better than rural SMEs that are non-members.*

Based on a large representative sample, this paper considers three hypotheses together to provide an evidence-based insight into differences in business performance when rural and urban SMEs participate in social media business networks. Also, the analysis can identify whether membership of social media business networks can enhance SME performance in rural areas or not. To compare differences in performance between four location-network groups, IPW is used to control for selection and for variations in business profile. The data, methodology and results are presented in the following sections.

4 | DATA AND METHODOLOGY

4.1 | Secondary data and descriptive statistics

This paper uses data from the Longitudinal Small Business Survey (LSBS) for 2015, which is a large-scale telephone survey of small business owners and managers across the UK. Although the LSBS has been conducted in each subsequent year, the information on a social media business network was only collected in the first wave of the LSBS (year 2015). This analysis focuses only on England and Wales since the business network information was only collected for those two devolved nations of the UK and their rural–urban classifications are different from Scotland and Northern Ireland. Therefore, this analysis uses the LSBS 2015 to examine the relationship between social media business networks and business performance for rural and urban SMEs in England and Wales. In 2015, responses from

15,501 SMEs were collected across the UK, of which 89.5% (13,876) were in England and Wales. Based on their postcode and the official ONS definition, businesses were classified as either rural or urban (ONS, 2015). Approximately 27% (3,764) of SMEs in England and Wales are located in rural areas. In the LSBS 2015, firms were asked whether they are part of social media business networks (e.g., LinkedIn). More than 50% of SMEs located in urban areas are members of social media business networks, while approximately 43% of rural SMEs are members of these online business networks (Table 1).

Table 2 details the descriptive statistics of the key variables used in the analysis. The sample is divided into four groups using the information on the location and business network membership and the Chi-square test is used to consider the differences in each variable used in the analysis. If $p < .05$, there is a significant difference between the four location-network membership groups. For example, 45.1% of urban SMEs that are members of social media business networks operate their businesses in the business service sector, followed by rural SMEs with membership (37.4%) and urban SMEs without membership (22.5%). Approximately 43% of urban SMEs that are members of social media business networks sought external advice or information on matters affecting their businesses in the last 12 months followed by rural SMEs with the membership (41.8%), urban SMEs without the membership (31.8%) and rural SMEs without the membership (28.4%).

4.1.1 | Dependent variables

Since social media networks are mainly used as part of marketing and sales strategies (Ainin et al., 2015; Lindsey-Mullikin & Borin, 2017; Öztamur & Karakadılar, 2014), this analysis focuses only on annual turnover and sales growth as the business performance. In the LSBS 2015, SMEs reported their annual turnover in the past 12 months. Also, for sales growth, firms were asked whether they aim to grow their sales in the next three years or not. In Table 2, differences in business performance are reported for the four location-network membership groups. Urban SMEs that are members of social media business networks have a higher mean of annual turnover than rural SMEs that are non-members of these online business networks. However, rural SMEs with network membership are more likely to have higher turnover than urban counterparts without network membership. For sales growth, urban SMEs with social media network membership are more likely to have reported that they aim to grow sales compared to rural SMEs with network membership and the other two groups (rural and urban SMEs without network membership), respectively. Thus, location seems likely to be associated with membership of social media business networks. Not accounting for firms selected into location and into business network participation in estimating business performance may result in bias estimates. To produce a robust analysis for the rural–urban comparison of SME performance

TABLE 1 Number of SMEs in each location and business network sub-group

	Social media business network		
	Non-participant	**Participant**	**Total**
Urban	4,874 (D1)	5,238 (D2)	10,112
Rural	2,154 (D3)	1,610 (D4)	3,764
Total	7,028	6,848	13,876

Source: LSBS (2015).

TABLE 2 Definition of variables and descriptive statistics (mean)

Variable	Definition	Urban		Rural		Chi-square (χ^2): Value (*df*)
		Without SMN (D1)	With SMN (D2)	Without SMN (D3)	With SMN (D4)	
Dependent						
TURN	Annual turnover (continuous)	2,256,805 (4,801)	3,291,619 (4,711)	1,474,892 (1,771)	2,269,930 (1,448)	45.49(3)**[a]
SALE	Whether a firm aims to grow sales (dummy)	0.611 (4,874)	0.799 (5,238)	0.563 (2,154)	0.745 (1,610)	139.9(3)**
Independent						
PRIM	A firm operates in broad sector including primary, production and construction (dummy)	0.238 (4,874)	0.160 (5,238)	0.357 (2,154)	0.231 (1,610)	576.1(3)**
TRANST	A firm operates in broad sector including transport, retail and food services (dummy)	0.282 (4,874)	0.191 (5,238)	0.302 (2,154)	0.227 (1,610)	172.1(3)**
BUSINESS	A firm operates in broad sector including business services (dummy)	0.225 (4,874)	0.451 (5,238)	0.164 (2,154)	0.374 (1,610)	1,118.6(3)**
MICRO	Whether a firm has 1–10 employees (dummy)	0.262 (4,874)	0.236 (5,238)	0.320 (2,154)	0.258 (1,610)	48.8(3)**
SMALL	Whether a firm has 11–49 employees (dummy)	0.266 (4,874)	0.270 (5,238)	0.230 (2,154)	0.251 (1,610)	11.5(3)**
MEDIUM	Whether a firm has 50–249 employees (dummy)	0.173 (4,874)	0.244 (5,238)	0.122 (2,154)	0.189 (1,610)	11.3(3)**
AGE05	Age of business between 0 – 5 years (dummy)	0.103 (4,851)	0.154 (5,224)	0.077 (2,146)	0.129 (1,610)	299.7(3)**
AGE20	Age of business 20 years and more (dummy)	0.608 (4,851)	0.521 (5,224)	0.655 (2,146)	0.519 (1,610)	280.1(3)**
SOTRD	Whether a firm is sole proprietorship (Legal status) (dummy)	0.206 (4,874)	0.103 (5,238)	0.210 (2,154)	0.120 (1,610)	266.8(3)**
WOMEN	Whether a firm is a women-led business (dummy)	0.212 (4,874)	0.201 (5,238)	0.216 (2,154)	0.188 (1,610)	58.1(3)**
FAMILY	Whether a firm is a family owned business	0.684 (4,815)	0.608 (5,154)	0.788 (2,137)	0.729 (1,591)	21.2(3)**
LDSE	Whether a firm is located in the core regions (London and South East) (dummy)	0.325 (4,887)	0.402 (5,250)	0.171 (2,157)	0.224 (1,612)	525.7(3)**

(Continues)

TABLE 2 (Continued)

Variable	Definition	Urban		Rural		Chi-square (χ^2): Value (*df*)
		Without SMN (D1)	With SMN (D2)	Without SMN (D3)	With SMN (D4)	
SUPPORT	Whether a firm sought external advice or information on matter affecting its business in the last 12 months (dummy)	0.284 (4,823)	0.433 (5,174)	0.318 (2,143)	0.418 (1,588)	88.3(3)**
FINANCE	Whether a firm tried to obtain external finance in the last 12 months (dummy)	0.164 (4,728)	0.206 (5,063)	0.188 (2,109)	0.210 (1,564)	33.2(3)**
OWNWEB	Whether a firm has its own website (dummy)	0.712 (4,874)	0.900 (5,238)	0.663 (2,154)	0.870 (1,610)	1,395.5(3)**
ECOMM	Whether a firm use e-commerce (e.g., direct order from own websites, using Amazon and eBay, etc.) (dummy)	0.257 (4,887)	0.398 (5,250)	0.246 (2,157)	0.372 (1,612)	1554.1(3)**
INNOV	Whether a firm has a strong capability to innovate (dummy)	0.593 (4,270)	0.618 (4,917)	0.569 (1,888)	0.637 (1,521)	103.7(3)**

Notes: Total sample size is reported in the parenthesis. SMN is social media business networks.

[a]Welch *t* test statistic is applied to test differences in turnover since variances among four location-network membership groups are unequal.

**Significance difference at 5%, and *df* is degree of freedom.

between the members and non-members of social media business networks, controlling for differences in firms' characteristics and profiles should also be taken into consideration at the same time.

4.1.2 | Independent variables

In Table 2, there are three main types of independent variables that are controlled in this analysis: business characteristics, business capabilities, and digital-related activities. First, for business characteristics, business sectors are included in the models since rural and urban SMEs that are members and non-members of social media business networks operate their businesses in different sectors. Here, four broad government sectors are included in the model due to the balancing test (Phillipson et al., 2019). The analysis also controls for regions by grouping London and South East regions together since these regions are the two largest UK regional economies (Maioli et al., 2020; Tiwasing et al., 2020) and are reported to have the highest levels of ICT adoption (Rocks, 2019). Business size can also affect business performance and the decision to participate in social media business networks. Thus, this analysis also includes this variable by dividing into micro, small and medium businesses to control for differences in business characteristics (Phillipson et al., 2019). Additionally, women-led businesses are controlled in the analysis since they are often found to register lower business performance (Maioli et al., 2020) and lower levels of ICT competence (Ughetto et al., 2020). For business types, family businesses are used in the analysis since they are mainly located in rural areas (Phillipson et al., 2000). Sole traders are also used as a control for business types, which are identified using the information from the UK legal register.

Second, for business capabilities, since the interaction between members of social media business networks is not available in the LSBS 2015, these variables are, then, included in the models to help identify the behaviour of SMEs that participate and do not participate in the online business networks in rural and urban areas. Information on SMEs that seek external information or advice to improve their businesses, obtaining external finance, and strong capability to innovate are included. These variables are significantly related to business performance and growth (Maioli et al., 2020; Tiwasing et al., 2020).

Finally, the analysis also includes some digital-related activities that can be associated with the adoption of social media business networks. Since social media networks are often used for sales and marketing, SMEs, both in rural and urban areas, may use them for online retail or e-commerce (Chang et al., 2017; Maioli et al., 2020). In addition, having their own websites can be linked to sales activities where products and services can be ordered directly from the website. These variables are included in the models to control for sales perspectives which could influence the participation in social media business networks for business performance improvements.

4.2 | Inverse probability weighting (IPW)

Since social media business networks are considered as a modern tool to help improve business performance and growth, the selection of a rural location comes at the cost of being less connected due to poor digital infrastructure and physical remoteness, potentially resulting in less participation in these business networks. Hence, these networks may be particularly important in rural areas as a means of overcoming geographical isolation, receiving business information/advice support, and improving a flow of information and knowledge. From the descriptive statistics (Table 1), rural SMEs are less likely to participate in social media business networks compared to urban counterparts. Thus,

participating in these networks could potentially enhance business performance and growth for rural businesses and could help reduce differences in business performance between rural and urban SMEs.

Since the location and participation in social media business networks are observed variables, IPW is, therefore, employed to compare the differences in business performance between rural and urban SMEs that are participants and non-participants of social media business networks. This technique estimates the matched-pair comparisons between the four location-business network groups (see Table 1), by controlling for selection bias and variations in business characteristics such as business sectors, business age, business capability, and so on (see Table 2). IPW is the Treatment Effect Analysis which is similar to Propensity Score Matching (PSM) (Rosenbaum & Rubin, 1983). Basically, PSM is widely used to estimate causal effects in observational studies. It concerns models with only two groups: the treated and untreated (control) groups. The matching process involves balancing a large number of observed characteristics (covariates) between the two groups by compressing the variables into a single score (the probability of treatment on covariates). This permits a comparison of the performance of individual firms with similar (matched) propensity scores across the treated and control groups. However, when evaluating more than two groups (i.e., the location-business network groups), PSM is inappropriate and the Inverse Probability Weighting (IPW) should be employed as this technique accounts for multilevel treatments (Imbens & Wooldridge, 2009).

IPW is a two-step approach to estimate treatment effects. First, IPW estimates the covariates of the treatment model and then computes the estimated inverse probability weights, which is similar to a propensity score from PSM. Then, it uses the estimated inverse-probability weights to compute weighted averages of the outcomes for each treatment level (four location-network groups). The differences of these weighted averages then provide the estimates for the estimated average treatment effect on the treated (ATET). Unlike conventional PSM, IPW estimates an inverse probability weights (propensity score) at the first stage using a multinomial logit model (MLM). In this analysis, the four location-network membership groups, urban SMEs that are non-members of social media business networks (D1), urban SMEs that are members (D2), rural SMEs that are non-members (D3), and rural SMEs that are members (D4), are regressed on the same set of covariates in Table 3 in which D4 is used as the reference category. In the MLM, the probabilities can be calculated as:

$$P_{ij} = Pr(Y_i = j \mid \mathbf{x}_i) = \frac{\exp(\mathbf{x'}_i \boldsymbol{\beta}_j)}{\sum_{j=0}^{2} \exp(\mathbf{x'}_i \boldsymbol{\beta}_j)} \tag{1}$$

where

$$\mathbf{x'}_i \boldsymbol{\beta}_j = \alpha_j + \sum_{k=1}^{K} \boldsymbol{\beta}_{kj} \mathbf{x}_{ki} \tag{2}$$

where $\Pr(Y_i = j|\mathbf{x}_i)$ is the probability of i^{th} firms being in j^{th} category: $j = 0$ if firms are the rural SMEs with the membership of social media business network which is the baseline category (D1), $j = 1$ if firms are the urban SMEs without membership (D2), $j = 2$ if firms are the urban SMEs with membership (D3), $j = 3$ if firms are the urban SMEs without membership (D4), $\mathbf{x}_k$ is a vector of covariates such as size, age of business, sector and so on (See Table 2), where $k = 1,\ldots, K$, exp is the exponential term, $\boldsymbol{\beta}_j$ is the coefficient vector for j^{th} category. It is noted that to compute the MLM probability, $\boldsymbol{\beta}_0$ is set to zero for the baseline category, then $\mathbf{x'}_0 \boldsymbol{\beta}_0 = 0$. Therefore, (1) can be rewritten for 4 categories as:

$$P_{ij} = Pr(Y_i = j \mid \mathbf{x}_i) = \frac{\exp(\mathbf{x'}_i \boldsymbol{\beta}_j)}{\exp(\mathbf{x'}_0 \boldsymbol{\beta}_0) + \sum_{j=1}^{3} \exp(\mathbf{x'}_i \boldsymbol{\beta}_j)} \tag{3}$$

TABLE 3 Results of multinomial logit model

	Model I		
	Urban SMEs without SMN VS Rural SMEs with SMN	**Urban SMEs with SMN VS Rural SMEs with SMN**	**Rural SMEs without SMN VS Rural SMEs with SMN**
	Coefficient (S.E)	**Coefficient (S.E)**	**Coefficient (S.E)**
FAMILY	−0.301*** (0.074)	−0.390*** (0.071)	0.133 (0.090)
AGE05	0.117 (0.105)	0.353*** (0.099)	−0.147 (0.130)
AGE20	0.266*** (0.070)	0.023 (0.068)	0.379*** (0.081)
MICRO	0.396*** (0.092)	0.162* (0.089)	0.335*** (0.103)
SMALL	0.550*** (0.097)	0.336*** (0.093)	0.129 (0.114)
MEDIUM	0.438*** (0.110)	0.469*** (0.103)	−0.153 (0.132)
PRIM	−0.395*** (0.103)	−0.327*** (0.104)	0.178 (0.116)
TRANST	−0.099 (0.101)	−0.210** (0.102)	0.207* (0 0.118)
SERVICE	−0.914*** (0.097)	0.099 (0.092)	−0.918*** (0.120)
SOTRD	0.616*** (0.104)	0.144 (0.106)	0.354** (0.116)
WOMEN	−0.007 (0.082)	0.040 (0.080)	0.187** (0.094)
LDSE	0.658*** (0.074)	0.802*** (0.071)	−0.160* (0.092)
SUPPORT	−0.502*** (0.066)	−0.073 (0.063)	−0.241*** (0.077)
FINANCE	−0.211*** (0.085)	−0.128 (0.081)	−0.012 (0.096)
OWNWEB	−0.921*** (0.096)	0.012 (0.102)	−0.896*** (0.103)
ECOMM	−0.441*** (0.069)	0.120** (0.065)	−0.394*** (0.081)
INNOV	−0.135** (0.064)	−0.100 (0.063)	−0.190** (0.074)
Constant	2.060*** (0.151)	1.002*** (0.154)	0.928*** (0.174)
Observation	12,274		
Wald $\chi^2(51)$	2,104.56		
Prob > χ^2	0.000		

Notes: *, **, *** denote significance at 10%, 5% and 1%, and SE is robust standard errors.

Multicollinearity is not an issue as the highest correlation is 0.42, which is from the correlation between SMALL and MEDIUM.

Rural SMEs using social media business network are used as a reference group.

SMN denotes as a social media business network.

or

$$P_{ij} = Pr(Y_i = j \mid \mathbf{x}_i) = \frac{\exp(\mathbf{x'}_i \boldsymbol{\beta}_j)}{1 + \sum_{j=1}^{3} \exp(\mathbf{x'}_i \boldsymbol{\beta}_j)} \tag{4}$$

where j = 1, 2 and 3. Therefore, for the baseline category, we have:

$$P_{ij} = Pr(Y_i = 0 \mid \mathbf{x}_i) = \frac{\exp(\mathbf{x'}_0 \boldsymbol{\beta}_0)}{\exp(\mathbf{x'}_0 \boldsymbol{\beta}_0) + \sum_{j=1}^{3} \exp(\mathbf{x'}_i \boldsymbol{\beta}_j)} \tag{5}$$

Or

$$P_{i0} = Pr(Y_i = 0 \mid \mathbf{x}_i) = \frac{1}{1 + \sum_{j=1}^{3} \exp(\mathbf{x'}_i \boldsymbol{\beta}_j)} \tag{6}$$

With (4) and (6), the predicted probabilities ($\widehat{P}_{ij}$) of being in the control groups are computed to compare the treatment-covariate relationship with that ($\widehat{P}_{i0}$) of being in the baseline category. For IPW, the probability weights are calculated by taking the inverse of the predicted probabilities ($\widehat{P}_i$) for the business i^{th} that is in the treatment j^{th}. It is simply the sample average of the outcome weighted by $\widehat{P}_i$. within each treatment j^{th}. Therefore, IPW can be expressed as:

$$\widehat{\mu}_{j,N} = N^{-1} \sum_{i=1}^{N} \frac{I(J_i = j) Y_i}{\widehat{P}_N(J_i = j \mid \mathbf{x}_i)} \tag{7}$$

where $I(\cdot)$ is an indicator function, J represents the location-business network category, where j = 0, 1, …, 3, and N is the total observations within the treatment j^{th}.

From (7), the potential outcome mean, $Y^*(J)$, is calculated for each location-network membership cegory, and then contrast $Y^*(J_j)$ (control) with the reference group (treatment),$Y^*(J_0)$, which is the treatment effect on the treated (ATET): $\widehat{\mu}_j = E[Y^*(J) \mid X = x]$. The potential outcome mean for SMEs being located in the D1 group and the other three groups can be written as $E[Y_i(J_0) \mid X = x, J_i = 0]$ and $E[Y_i(J_j) \mid X = x, J_i = j]$, where $j = 1, \ldots, 3$, respectively. Thus to estimate ATET between the four groups, we have:

$$\text{ATET} = E[Y_i(J_0) \mid X = x, J_i = 0] - E[Y_i(J_j) \mid X = x, J_i = j] \tag{8}$$

Where Y_i is a business performance of i^{th} SME, measured in terms of turnover and sales growth. The results are presented and discussed in the following section.

5 | RESULTS AND DISCUSSION

Table 3 shows the results of multinomial logistic regressions concerning the probability of a firm being located in a rural area and being a member of social media business networks comparative to the other three groups (Model I). Model I performs reasonably well, and the likelihood ratio (LR) is significant. The Wald test is also significant, implying that the estimated parameters of the chosen covariates in the first stage are statistically significant. Also, multicollinearity is not an issue since the highest correlation of Model I is 0.42, which is the correlation between TRANST and BUSINESS.

In Model I, urban SMEs that are members and non-members of social media business networks are less likely to be family-owned businesses (FAMILY) than rural firms that are members of these online networks. This is because family businesses are mainly located in rural areas and are often found to have a lower level of ICT adoption (Phillipson et al., 2000; Wilson et al., 2018). Urban firms that are members of social media business networks are more likely to be younger (AGE05) than rural counterparts. While urban and rural SMEs that are non-members of these networks tend to be older (AGE20) than rural firms that are members. This suggests that older managers/firms in both rural and urban areas who are not familiar with digital technology may find it difficult to use new communication and online digital technologies in their businesses (Kraus et al., 2019). For business

size, rural and urban SMEs that are non-members of social media business networks are more likely to be micro-businesses (MICRO) compared to rural SMEs that are members. While urban firms that are members and non-members of social media business networks are more likely to be medium businesses (MEDIUM) compared to rural firms with membership. This suggests that rural SMEs that are members of these online business networks tend to be smaller than urban SMEs that are members since micro and small businesses are predominant in rural areas (Phillipson et al., 2019) and they often have a lower digital capability compared to larger businesses in urban areas (Mack-Smith et al., 2016; Townsend et al., 2016).

Considering the business sectors, urban firms that are members and non-members of social media business networks are less likely to operate their businesses in primary, production and construction sectors (PRIM) than rural businesses that are members. While rural businesses without network membership are more likely to operate in these sectors compared to rural firms that are members. This result is similar to the study of Phillipson et al. (2002) where rural economies are predominantly based on the primary industries, and the adoption of ICT is low amongst these businesses (Wilson et al., 2018). Though, rural firms that are members of social media business networks tend to operate their businesses in business service sectors (SERVICE) more than those who are non-members. Since the rural economy is moving away from a sole focus on agriculture and land-based economies to encompass, for example, tourism and food and beverage service industries (all of which are included in the business service sectors here) (Townsend et al., 2016), this finding indicates that social media business networks and other online activities can help these rural businesses to be well-connected with online operation and communication services (Tiwasing et al., 2020) and to reduce geographical disconnection from professional networks, peers, and customers (Townsend et al., 2016; Wilson et al., 2018).

In addition, urban and rural SMEs that are non-members of social media business networks are more likely to be sole traders (SOTRD) than rural firms that are members. Interestingly, women-led businesses in rural areas are less likely to participate in social media business networks since the result shows that rural SMEs that are non-members of social media business networks are more likely to be women-led businesses (WOMEN) compared to rural firms with network membership. In rural areas, women-led businesses are traditionally related to digital disadvantages due to digital inequalities, in terms of lower access, skills and self-perceptions in relation to digital technologies, compared to men-led businesses (Ughetto et al., 2020). Considering the two largest regional economies in the UK, urban SMEs that participate in the online business networks are more likely to be located in London and the South East compared to rural counterparts. While rural SMEs that are non-members of these networks are less likely to be located in these regions compared to rural businesses that are members. This indicates that both urban and rural SMEs who rely on digital connectivity are likely to be located in London and the South East where the digital access and networks are better than other regions (Lee & Rodríguez-Pose, 2013; Phillipson et al., 2019; Rocks, 2019).

The results also demonstrate that rural and urban SMEs that are non-members of social media business networks are less likely to receive external information or advice for business improvements (SUPPORT) than rural businesses that are members. This suggests that businesses located in rural areas may make use of external information through participation in social media business networks. Therefore, promoting online communication platforms can aid rural SMEs to receive better business support from business advice providers, including both governmental and non-governmental services (Philip et al., 2017; Townsend et al., 2016). Likewise, rural and urban businesses that are non-members of social media business networks are less likely to have their own websites (OWNWEB) and to use e-commerce (ECOMM) to promote or sell goods or services compared to rural SMEs that are members. However, urban SMEs with network membership are more likely to use e-commerce

TABLE 4 Results of inverse probability weighting (IPW)

	Observations		Turnover	Observations		Sales growth
	Raw	Weighted	ATET (S.E.)	Raw	Weighted	ATET (S.E.)
Urban SMEs without SMN (D1) VS Rural SMEs with SMN (D4)	3,557	2,692.6	−0.214** (0.091)	4,165	3,059.4	−0.047** (0.018)
Urban SMEs with SMN (D2) VS Rural SMEs with SMN (D4)	4,343	2,652.6	0.102 (0.097)	4,776	3,009.1	0.052*** (0.020)
Rural SMEs without SMN (D3) VS Rural SMEs with SMN (D4)	1,565	2,729.5	−0.272** (0.107)	1,857	3,105.7	−0.052** (0.021)
Rural SMEs with SMN (POmean)	1,346	2,736.3	4.496*** (0.094)	1,476	3,099.8	0.683*** (0.017)
Total observation	10,811			12,274		
Variance ratio	No significant difference			No significant difference		

Notes: *, **, and *** denote significance at 10%, 5% and 1%, and SE is clustered standard errors.

The results of the balancing test (variance ratio) are available upon request.

than rural firms with network membership. These findings suggest that although rural SMEs can use e-commerce to sell their products and services, their online retail capabilities may be limited compared to urban counterparts because of inferior broadband and telecommunication services (Philip et al., 2017; Townsend et al., 2016).

For business capability, rural SMEs that are members of social media business networks are more likely to obtain external finance (FINANCE) than urban SMEs that are non-members. Similarly, rural SMEs that are members of these online networks are more likely to report that they have a strong capability to innovate (INNOV) than both urban and rural businesses that are non-members. However, they are less likely to report being innovative than urban SMEs that are members. This is because urban businesses are often found to be in a location that has more advantages for stimulating product and process innovation and better ICT facilities than rural areas (North & Smallbone, 2000; Phillipson et al., 2019).

After controlling for selection bias and variations in business characteristics between four location-network membership groups, the probability weighting is calculated and used to compare the business performance between businesses who have similar weighted probabilities (a match-pair comparison). Table 4 shows the results of IPW. The key findings show that rural SMEs that are members of social media business networks tend to perform better than both rural and urban SMEs that are non-members of these online business networks for annual turnover and sales growth, which is consistent with H1 and H3. However, rural SMEs that are members of social media business networks underperform urban SMEs that are members for sales growth, but they perform as well as urban counterparts for turnover. Although these results do not support H2, they can imply that being members of these online business networks can help improve business performance in rural areas. For the lower level of sales growth, it could be explained by the inherent advantages of urban locations in terms of higher population density, greater business connections, better digital infrastructure, and superior broadband connectivity compared to rural areas (Townsend et al., 2016; Westhead et al., 2004).

6 | CONCLUSIONS AND POLICY RECOMMENDATIONS

Using large cross-sectional data of SMEs in England and Wales, this paper compares the differences in business performance measured in terms of turnover and sales growth between rural and urban SMEs that are both members and non-members of social media business networks. The key findings confirm that being members of social media business networks can enhance business performance in rural areas since rural SMEs that are members of social media business networks are more likely to register higher turnover and seek to grow sales than rural and urban SMEs that are non-members of these online networks. Also, for annual turnover, rural firms that are members of social media business networks perform as well as urban SMEs that are members. Though, for sales growth, they underperform urban counterparts. Overall, the results suggest that membership of social media business networks can aid business performance improvement for rural SMEs and diminish gaps in the performance between rural and urban firms (Öztamur & Karakadılar, 2014; Quinton & Wilson, 2016; Townsend et al., 2016). However, membership of these online business networks cannot overcome all the advantages of urban settings regarding higher densities of business connections and customers and innovation activities (Alvedalen & Boschma, 2017) since rural SMEs with membership still underperform urban counterparts in their aim to grow sales.

This paper delivers some key contributions to knowledge. First, previous studies have not examined the impact that membership of a social media business network has on SME performance in the context of rural–urban comparative analysis. This paper provides a significant input to debates

regarding how online business networks can enhance SME performance in rural areas compared to urban areas. Those networks can overcome the geographical limitation of rural SMEs in terms of accessing resources and online networking activities. Second, following Phillipson et al. (2019), this paper introduces the IPW technique for the comparative analysis between rural and urban SMEs for both members and non-members of social media business networks. It is applicable as both location and online network membership are observed variables in the LSBS 2015. This technique is effective in reducing selection bias in observational studies when there are more than two study groups. Next, using a large representative sample of the LSBS dataset adds a comprehensive evidence-based analysis to existing literature. There is a need for further timely empirical studies given the emphasis on online business networks in the current digital business climate. Finally, the analysis controls for differences in key business characteristics which enables a more nuanced understanding of how location and online business network memberships may have different implications for SME performance.

This paper suggests some implications for policy related to the key results. First, participation in social media business networks can enhance rural SME performance. Also, rural SMEs that are members of these online networks tend to have their own websites and use e-commerce. Therefore, investing in superior digital infrastructure and high-speed broadband connectivity (i.e., superfast or ultrafast broadband) can increase an opportunity for rural SMEs to participate in online networking activities and online retail services, especially rural SMEs operating in business service sectors as they need to be well-connected with online retail services and communications. This draws attention to both infrastructural issues and skills development since not all rural SMEs are successful in their online activities. Therefore, business support programmes should incorporate practical advice on building social media business profiles, including e-commerce and online retail activities, and how best to use them to build professional networks and connect with potential customers, and identify market intelligence source and market opportunities. This will help rural SMEs to better understand the opportunities and challenges of online business networks and marketing activities since they significantly contribute to the UK economy during the digital era and the COVID-19 crisis. Without a focus also on the 'demand side' investments in digital infrastructure, rural SMEs will not reap the full potential rewards.

Second, the results highlight the digital inequality at the regional level since SMEs located in London and the South East, especially urban SMEs, are more likely to be members of social media business networks. Those regions are the two leading UK regional economies with a higher level of ICT adoption than other regions. Thus, during a rapid digital transformation, the government should consider an urgent investment in digital infrastructure for those regions that are currently underserviced by their broadband connection and digital services, especially rural and 'hard-to-reach' locations. Also, the government should focus on how to ensure the effectiveness of the public sector's market interventions in broadband infrastructure developments in addressing territorial digital divides and offer low-cost provision of digital and broadband services for rural businesses, especially those who rely on the use of Internet and digital services such as tourism and food and drink service industries. Improving digital infrastructure and services for under-serviced regions and rural businesses could help boost the UK regional economy which supports the government's 'levelling-up' agenda in the digital era.

Next, the results show that rural SMEs that are members of social media business networks tend to use information/advice and seek external finance. This suggests that rural SMEs should be encouraged to make use of online business networks. This can help improve business advice environments and enhance the capability of getting financial support for rural businesses since social media business networks are considered as an effective initiator of network developments and business advice solutions (Chang et al., 2017; Quinton & Wilson, 2016). Therefore, business support providers should provide online co-working spaces for rural businesses to interact and discuss their needs and business

issues. This emphasises the importance of community building via social media network participation (i.e., LinkedIn) for firms who wish to optimise value creation, by identifying specific and concrete routes for business performance enhancement (Quinton & Wilson, 2016).

Finally, the results also reveal the lower level of older SMEs participating in social media business networks. Older firms may find it difficult to access social media business networks since they tend to require a more intensive learning process to shift from conventional forms of communication to new communication technologies. Therefore, a skills training programme related to digital technology for older businesses and a mature workforce should be implemented in the workplace to help increase people's ability to work with the technology and boost the changes of future business success. This could also help older SMEs, especially in rural areas, to have better access to online information and digitalised public services and economic resources (i.e., funding applications) as well as networking.

This paper highlights some avenues for further research. Given the quantitative nature of this paper, interviewing management-level personnel is recommended to gain deeper understandings of how SMEs participate in social media business networks to improve their business performance. Future studies should also consider the impact of different types of social media business networks on business performance and the interaction between members within the networks, both free and paying members. Additionally, regarding the lower level of women-led businesses accessing online business networks, the adoption of ICT among women-led businesses should be further researched. Since the data was collected before the COVID pandemic, it would be interesting to understand how SMEs use social media business networks to enhance their business performance during the COVID crisis. Lastly, due to data limitation, future research would benefit from a longitudinal data analysis to better understand the impact of online business networks on business performance over time.

ACKNOWLEDGEMENT

The author would like to thank Rural Enterprise UK (REUK), Dr Beth Clark, and Dr Menelaos Gkartzios at Newcastle University for their initial discussions and suggestions. Also, many thanks to two anonymous reviewers for their constructive feedback. The author is also grateful to the Department for Business, Energy and Industrial Strategy (BEIS) for data which is available upon request at UK Data Service: www.ukdataservice.ac.uk.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest regarding the publication of this article.

ETHICAL APPROVAL

This paper is an empirical study using secondary data commissioned by the Department for Business, Energy and Industrial Strategy (BEIS), UK. Therefore, no ethical approval is required.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available upon request at the UK Data Service: Department for Business, Energy and Industrial Strategy. (2020). Longitudinal Small Business Survey, 2015–2019. [data collection]. 4th Edition. UK Data Service. SN: 7,973, http://doi.org/10.5255/UKDA-SN-7973-4

ORCID

Pattanapong Tiwasing https://orcid.org/0000-0001-9604-1656

REFERENCES

Ainin, S., Parveen, F., Moghavvemi, S., Jaafar, N. I., & Mohd Shuib, N. L. (2015). Factors influencing the use of social media by SMEs and its performance outcomes. *Industrial Management & Data Systems*, *115*(3), 570–588. https://doi.org/10.1108/IMDS-07-2014-0205

Alvedalen, J., & Boschma, R. (2017). A critical review of entrepreneurial ecosystems research: Towards a future research agenda. *European Planning Studies*, *25*(6), 887–903. https://doi.org/10.1080/09654313.2017.1299694

Aral, S., Dellarocas, C., & Godes, D. (2013). Introduction to the special issue—Social media and business transformation: A framework for research. *Information Systems Research*, *24*(1), 3–13. https://doi.org/10.1287/isre.1120.0470

Barney, J. B., Ketchen, D. J., & Wright, M. (2011). The future of resource-based theory: Revitalization or decline? *Journal of Management*, *37*(5), 1299–1315. https://doi.org/10.1177/0149206310391805

BIS. (2015). *Digital capabilities in SMEs: Evidence review and re-survey of 2014 small business survey respondents*. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/457750/BIS-15-509-digital-capabilities-in-SMEs-evidence-review-and-re-survey-of-2014-smallbusiness-survey-respondents.pdf

Bosworth, G. (2012). Characterising rural businesses—Tales from the paperman. *Journal of Rural Studies*, *28*(4), 499–506. https://doi.org/10.1016/j.jrurstud.2012.07.002

Bourdieu, P., & Wacquant, L. J. (1992). *An invitation to reflexive sociology*. University of Chicago press.

Cenamor, J., Parida, V., & Wincent, J. (2019). How entrepreneurial SMEs compete through digital platforms: The roles of digital platform capability, network capability and ambidexterity. *Journal of Business Research*, *100*, 196–206. https://doi.org/10.1016/j.jbusres.2019.03.035

Chang, S. E., Liu, A. Y., & Shen, W. C. (2017). User trust in social networking services: A comparison of Facebook and LinkedIn. *Computers in Human Behavior*, *69*, 207–217. https://doi.org/10.1016/j.chb.2016.12.013

Cross, R., Liedtka, J., & Weiss, L. (2005). A practical guide to social networks. *Harvard Business Review*, *83*(3), 124–132. https://hbr.org/2005/03/a-practical-guide-to-social-networks

Franco, M., Haase, H., & Pereira, A. (2016). Empirical study about the role of social networks in SME performance. *Journal of Systems and Information Technology*, *18*(4), 383–403. https://doi.org/10.1108/JSIT-06-2016-0036

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, *78*(6), 1360–1380. http://www.jstor.org/stable/2776392. https://doi.org/10.1086/225469

Imbens, G. W., & Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature*, *47*(1), 5–86. https://doi.org/10.1257/jel.47.1.5

Jones, N., Borgman, R., & Ulusoy, E. (2015). Impact of social media on small businesses. *Journal of Small Business and Enterprise Development*, *22*(4), 611–632. https://doi.org/10.1108/JSBED-09-2013-0133

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, *53*(1), 59–68. https://doi.org/10.1016/j.bushor.2009.09.003

Kraus, S., Gast, J., Schleich, M., Jones, P., & Ritter, M. (2019). Content is king: How SMEs create content for social media marketing under limited resources. *Journal of Macromarketing*, *39*(4), 415–430. https://doi.org/10.1177/0276146719882746

Lee, N., & Rodríguez-Pose, A. (2013). Original innovation, learnt innovation and cities: Evidence from UK SMEs. *Urban Studies*, *50*(9), 1742–1759. https://doi.org/10.1177/0042098012470395

Lekhanya, L. M. (2018). The digitalisation of rural entrepreneurship. In Sílvio Manuel Brito (Ed.), *Entrepreneurship-trends and challenges*. IntechOpen. 10.5772/intechopen.75925

Lin, N., Fu, Y. C., & Hsung, R.-M. (2001). The position generator: Measurement techniques for investigations of social capital. In N. Lin, K. Cook, & R. S. Burt (Eds.), *Social capital: Theory and research* (pp. 57–81). Aldine de Gruyter.

Lindsey-Mullikin, J., & Borin, N. (2017). Why strategy is key for successful social media sales. *Business Horizons*, *60*(4), 473–482. https://doi.org/10.1016/j.bushor.2017.03.005

Mack-Smith, D., Lewis, J., Bradshaw, M., & Brown, D. (2016). State of digitisation in UK business. *Strategic Labour Market Intelligence Report*. http://www.sqw.co.uk/files/3714/7282/6880/SQW_2016_Digitisation_productivity_report.pdf

Maioli, S., Tiwasing, P., Gorton, M., Phillipson, J., & Newbery, R. (2020). Spatial disparities in SMEs productivity in England. ERC Research No 84, Enterprise Research Centre. https://www.enterpriseresearch.ac.uk/wp-content/uploads/2020/02/ERC-ResPap84-Maioli-et-al.pdf

McCann, M., & Barlow, A. (2015). Use and measurement of social media for SMEs. *Journal of Small Business and Enterprise Development*, *22*(2), 273–287. https://doi.org/10.1108/JSBED-08-2012-0096

Möller, K., & Svahn, S. (2009). How to influence the birth of new business fields—Network perspective. *Industrial Marketing Management*, *38*(4), 450–458. https://doi.org/10.1016/j.indmarman.2008.02.009

Moyes, D., Whittam, G., & Ferri, P. (2012). A conceptualisation of the relationship capital of rural small service firms. *Local Economy*, *27*(2), 136–151. https://doi.org/10.1177/0269094211428867

Naudé, P., Zaefarian, G., Najafi Tavani, Z., Neghabi, S., & Zaefarian, R. (2014). The influence of network effects on SME performance. *Industrial Marketing Management*, *43*(4), 630–641. https://doi.org/10.1016/j.indmarman.2014.02.004

North, D., & Smallbone, D. (2000). The Innovativeness and growth of rural SMEs during the 1990s. *Regional Studies*, *34*(2), 145–157. https://doi.org/10.1080/00343400050006069

Onitsuka, K. (2019). How social media can foster social innovation in disadvantaged rural communities. *Sustainability*, *11*(9), 1–24. https://doi.org/10.3390/su11092697

ONS. (2015). *2011 Rural/urban Classification*. Office of National Statistics. www.gov.uk/government/statistics/rural-urbanclassification-leaflet

Öztamur, D., & Karakadılar, İ. S. (2014). Exploring the role of social media for SMEs: As a new marketing strategy tool for the firm performance perspective. *Procedia—social and Behavioral Sciences*, *150*, 511–520. https://doi.org/10.1016/j.sbspro.2014.09.067

Paniagua, J., & Sapena, J. (2014). Business performance and social media: Love or hate? *Business Horizons*, *57*(6), 719–728. https://doi.org/10.1016/j.bushor.2014.07.005

Pettersen, L. (2016). The role of offline places for communication and social interaction in online and virtual spaces in the multinational workplace. *Nordicom Review*, *37*(s1), 131–146. https://doi.org/10.1515/nor-2016-0028

Philip, L., Cottrill, C., Farrington, J., Williams, F., & Ashmore, F. (2017). The digital divide: Patterns, policy and scenarios for connecting the 'final few' in rural communities across Great Britain. *Journal of Rural Studies*, *54*, 386–398. https://doi.org/10.1016/j.jrurstud.2016.12.002

Phillipson, J., Lowe, P., Raley, M., & Moxey, A. (2002). The nature of needs of rural microbusinesses in the north east of England. Centre for Rural Economy, Newcastle University. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.625.3406&rep=rep1&type=pdf

Phillipson, J., Tiwasing, P., Gorton, M., Maioli, S., Newbery, R., & Turner, R. (2019). Shining a spotlight on small rural businesses: How does their performance compare with urban? *Journal of Rural Studies*, *68*, 230–239. https://doi.org/10.1016/j.jrurstud.2018.09.017

Putnam, R. D. (2000). Bowling alone: America's declining social capital. In L. Crothers, & C. Lockhart (Eds.), *Culture and politics: A reader* (pp. 223–234). Palgrave Macmillan US.

Qian, H., Acs, Z. J., & Stough, R. R. (2013). Regional systems of entrepreneurship: The nexus of human capital, knowledge and new firm formation. *Journal of Economic Geography*, *13*(4), 559–587. https://doi.org/10.1093/jeg/lbs009

Quinton, S., & Wilson, D. (2016). Tensions and ties in social media networks: Towards a model of understanding business relationship development and business performance enhancement through the use of LinkedIn. *Industrial Marketing Management*, *54*, 15–24. https://doi.org/10.1016/j.indmarman.2015.12.001

Roberts, E., Beel, D., Philip, L., & Townsend, L. (2017). Rural resilience in a digital society: Editorial. *Journal of Rural Studies*, *54*, 355–359. https://doi.org/10.1016/j.jrurstud.2017.06.010

Rocks, C. (2019). Productivity trends in London: An evidence review to inform the Local Industrial Strategy evidence base. *GLA Economics Report*. https://www.london.gov.uk/sites/default/files/productivity-trends-in-london-final.pdf

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*(1), 41–55. https://doi.org/10.1093/biomet/70.1.41

Stephen, A. T., & Toubia, O. (2010). Deriving value from social commerce networks. *Journal of Marketing Research*, *47*(2), 215–228. https://doi.org/10.1509/jmkr.47.2.215

Tiwasing, P., Kim, Y. R., & Akinremi, T. (2020). Spatial disparities in SME productivity: Evidence from the service sector in England. *Regional Studies, Regional Science*, *7*(1), 589–602. https://doi.org/10.1080/21681376.2020.1854111

Townsend, L., Wallace, C., Smart, A., & Norman, T. (2016). Building virtual bridges: How rural micro-enterprises develop social capital in online and face-to-face settings. *Sociologia Ruralis*, *56*(1), 29–47. https://doi.org/10.1111/soru.12068

Ughetto, E., Rossi, M., Audretsch, D., & Lehmann, E. E. (2020). Female entrepreneurship in the digital era. *Small Business Economics*, *55*(2), 305–312. https://doi.org/10.1007/s11187-019-00298-8

Vásquez, G. A. N., & Escamilla, E. M. (2014). Best practice in the use of social networks marketing strategy as in SMEs. *Procedia—social and Behavioral Sciences*, *148*, 533–542. https://doi.org/10.1016/j.sbspro.2014.07.076

Warren, M. (2007). The digital vicious cycle: Links between social disadvantage and digital exclusion in rural areas. *Telecommunications Policy*, *31*(6), 374–388. https://doi.org/10.1016/j.telpol.2007.04.001

Westhead, P., Ucbasaran, D., & Binks, M. (2004). Internationalization strategies selected by established rural and urban SMEs. *Journal of Small Business and Enterprise Development*, *11*(1), 8–22. https://doi.org/10.1108/14626000410519065

Williams, J. R. (2019). The use of online social networking sites to nurture and cultivate bonding social capital: A systematic review of the literature from 1997 to 2018. *New Media & Society*, *21*(11–12), 2710–2729. https://doi.org/10.1177/1461444819858749

Wilson, B., Atterton, J., Hart, J., Spencer, M., & Thomson, S. (2018). *"Unlocking the digital potential of rural areas across the UK", Rural England and Scotland's Rural College*. https://ruralengland.org/wp-content/uploads/2018/03/Unlocking-digital-potential-website-version-final.pdf

How to cite this article: Tiwasing P. Social media business networks and SME performance: A rural–urban comparative analysis. *Growth and Change*. 2021;00:1–22. https://doi.org/10.1111/grow.12501