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Old technologies in a modern communications landscape: public call boxes and universal service

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Abstract

This paper explores the changing nature of universal service. In particular, it looks at universal service obligations within the United Kingdom and the role that public call boxes play within the context of a vibrant mobile telecommunications market with extensive geographical coverage and widespread usage. Our analysis draws on data from the 2021consultation by Ofcom into the scope of the UK's universal service obligations to highlight their complex nature. Although the number of public call boxes has dramatically fallen in recent years, not least because of the growth in mobile phone usage, they still perform a vital socio-economic role. This role complicates their replacement, creating economic inefficiency but social value. The latter limits the ability of stakeholders – regulators and mobile operators – to radically amend how the universal service obligation is provided.

Keywords: Public call boxes; universal service obligations; consultation; UK

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PRELIMINARY DRAFT – Do not quote without permission of the authors

1. Introduction

In today's digital economy, access to telecommunication services is essential. Through broadband and smartphones, individuals and businesses are able to access the Internet with all that this entails. The benefits of such access are multi-faceted, ranging from enabling individuals and businesses to access distant markets to consuming a wide range of services and content online. Recognising the importance of access to telecommunication services, governments around the world have sought to support the provision of (improved) broadband and mobile networks.

Recent initiatives by governments, which typically focus on gigabit networks or 4G, and sometimes even 5G, mobile networks, often overshadow the long-standing use of universal service obligations to provide telecommunication networks to those areas that would be overlooked if provision was determined solely by the market. This paper explores one specific long-standing component of the universal service obligation regime that emerged in the UK in the early 2000s with the adoption of a series of European Union directives. These created a regulatory framework that governed how a number of telecommunication services should be provided. Here we focus on one of these, namely, public call boxes.

Although public call boxes have been subject to universal service obligations for over 20 years, their role in the wider telecommunications market has changed – over time, as the number of mobile users has grown, the use and number of public call boxes has declined. However, public call boxes remain one of the few telecommunication services subject to universal service objections, which begs the question as to why? One plausible explanation relates to the role of public call boxes in complementing other, often more advanced telecommunication services, especially where these are not available. Another explanation relates to the technical characteristics of public call boxes, which currently are not susceptible

to power cuts in the same way that other telecommunication services are. A third set of possible explanations centre on how public call boxes provide access to a number of services for free, which when coupled with their visibility, means that they are readily accessible.

To explore how public call boxes are perceived and their continued role within universal service obligations this paper draws on a recent consultation in the UK (Ofcom, 2021, 2022a). This consultation sought to amend the regulatory framework in light of a number of technical and socio-economic changes. This consultation enables us to explore the extent to which old technologies, which are perceived to be technologically inferior to new ones, have a societal value that warrants their retention. As a consequence, our investigation combines economic with social factors to offer a holistic analysis of the role of public call boxes.

The remainder of this paper is divided into six sections. There is a brief review of relevant literature in the following section, which is then followed by a description of the public call boxes and universal service obligations in the UK. The methodology adopted in this paper is outlined in Section 4, before the responses to the consultation are analysed in Section 5. The issues that arise from the consultation are discussed in Section 6, with conclusions being drawn in the final section of this paper. Finally, a comment on terminology: 'pay phones' and ‘public call boxes’ are not interchangeable, with the latter referring to structures that can be found in public spaces (such as the famous red box designed by Sir Gilbert Scott) while the former is a phone that may be located in private spaces such as bars, or betting shops. Thus, while every public call boxes is a pay phone, not all pay phones are public call boxes. Throughout, we use the term in the source cited.

2. Literature

Over the years, universal service in telecommunication markets has attracted considerable interest. The interest has examined the development and implementation of universal service obligations, regionally (see, for example, Batura, 2016a; BEREC, 2010; Blackman and Forge, 2008) as well as nationally (see, for example, Berne, 2008; Mueller, 1993; Prieger, 1998; Wirzenius, 2008). Research has also examined the scope of universal service (see, for example, Alleman, Rappoport and Banerjee, 2010; Hutton, 2022; Priestley and Sutherland, 2016; Simpson, 2004), with a key issue being if and how new technologies and thus services should be included. The inclusion of mobile services has been considered (see, for example, Goggin, 2008; Kim, 2008), as has broadband (see, for example, Kim, 2008; Xavier, 2003).

Within this context, payphones are sometimes mentioned. Payphones provide a means of facilitating universal access to telephony services (Xavier, 2008), providing a means of communication that can be accessed by many (Bahtsevanoglou, 2010; Goggin, 2008). Relatively few papers, however, focus on the relationship between payphones and universal service. Stork (2011) asked whether mobile phones are replacing payphones in 17 African countries, finding that as incomes increase the usage of payphones decline. Interestingly the analysis highlights the role of payphones as a provider of a 'safety net' (Stork, 2011), a development that could be facilitated through the issuing of separate and technologically neutral licences. Srinuan (2014), who looked at developments within Thailand, also noted how mobile phone usage was replacing that of payphones. As the analysis found that payphones played an important role for low-income users, it echoed the 'safety net' perspective outlined in Stork (2011).

Looking at payphones within 27 Europe Union member states, Hasbi (2015) sought to ascertain whether their universal service obligation should continue. The analysis highlighted

the positive impact of coverage obligations on payphone use, but noted that this was relatively low (Hasbi, 2015). Although Hasbi (2015) asks the following question: *"should an old technology be kept afloat artificially by regulation for the sake of universal service when a more efficient technology has appeared?"* (p. 421), no clear answer is provided. Moreover, given the socio-economic nature of universal service, it is not altogether clear that the approach adopted by Hasbi (2015), which is econometric in nature, can provide a clear answer given the nature of their role on the one hand and technological change on the other.

Batura (2016b) also looks at Europe, noting that payphones were included within universal service in the 1990s to provide access when individuals were travelling. Furthermore, the regulatory approach adopted in the European Union (EU) gave Member States a degree of flexibility regarding the provision of payphones. Subsequent revisions to the regulatory framework allowed some Member States – Austria, Belgium, Denmark, Finland and The Netherlands – to remove payphones from the scope of their respective universal service obligations (Batura, 2016b, p. 200). Not only did this reflect the increasing availability of mobile handsets and widespread mobile coverage, but also their substitution of payphones (Blackman and Forge, 2008; Goggin, 2008).

Moreover, the removal of payphones from the universal service obligation in some Member States can also be interpreted as its modernisation, aligning its content with the new digital economy that is emerging. This would, one imagines, meet with the approval of Batura (2014, p. 30) who witheringly described the scope of universal service in the mid-2010s, writing: "*the scope of the current universal service looks obsolete against the background of the Information Society, a telephone service directory and directory enquiry services and a payphone are relics from the past century and a legacy of the Post, telegraph and telephone service (PTT) systems".*

3. Public call boxes and universal service

In mid-2003, the Office of Telecommunications (Oftel) announced that it had designated BT and Kingston Communications as universal service providers (Oftel, 2003c). This marked the end of a consultation that had begun earlier in the year (Oftel, 2003a, 2003b) that reflected changes at the EU level where a new regulatory regime had been developed that included, among other things, the Universal Service Directive. Although Oftel noted that some aspects of universal service would be achieved through 'general conditions' the differences brought about by the Universal Service Directive were such that it was necessary to designate universal service providers and impose specific conditions on them (Oftel, 2003c). No funding would be provided to either BT or Kingston Communications to enable them to fulfil their obligations, with Oftel (2003c, p. 9) noting that *"in the absence of effective competition in the retail markets, the cost of measures to protect vulnerable customers does not represent an unfair burden upon BT and Kingston. Any such cost needs to be offset against the benefits …"*. In other words, the benefits of being a universal service provider, it was argued, outweigh the costs. Two years later a slightly different argument was made by Ofcom, who argued that the costs of the universal service obligation on BT was not a burden (Ofcom, 2005a).

The specific conditions imposed on both telecommunication companies are shown in Table 1, with BT being subject to more than Kingston Communications. These conditions are arguably broad in their scope, but for our purposes it can be seen that both telecommunication companies are required to provide public call boxes. The procedures for removal or re-positioning of existing phone boxes as well as how the installation of new ones were outlined in Oftel (2003b), confirmed by Oftel (2003c) subject to two changes. One of these changes defined a site as "an area within a walking distance of 100 metres of an existing public call box" (Oftel, 2003c, p. 15).

[Insert Table 1 about here]

A more detailed description of the procedures can be found in Oftel (2003d). These detailed descriptions are, in essence, summarised in Annex B, which is the 'Direction' imposed on BT and Kingston Communications. In addition, Oftel (2003d) stated that when only a single phone box remains in an area, its users should be given the option to pay with cash.

In mid-2004, the Office of Communications (Ofcom), which replaced Oftel, sought to amend the regulations pertaining to public call boxes. Although a series of market reviews had resulted in a particular licence condition from being applied in a number of areas (Ofcom, 2004), it still applied to public call boxes. Ofcom sought to change this, with BT and Kingston providing 'undertakings' instead. Early in the following year, Ofcom published its decision – the licence condition would no longer apply to public call boxes (Ofcom, 2005d), with the voluntary undertakings proposed by BT and Kingston being accepted. Among other things, BT and Kingston agreed to provide users with access to 'free-to-caller' services from their payphones.

As part of the wider review of universal service launched in early 2005 (Ofcom, 2005b, 2005c), the regulatory regime around the provision of public call boxes was examined. The consultation highlighted the role of the local veto that would prevent the removal of the last public call box in a locality (Ofcom, 2005b), as well as the declining revenues and returns that they generate (Ofcom, 2005b, 2005c). The revenue generated by BT's payphones had fallen by 47 per cent between 2000 and 2006 (Ofcom, 2006a, p. 17) though the business as a whole was profitable in 2005. To tackle unprofitability across its public call box portfolio, BT removed 28,500 boxes between March 2002 and March 2006 (Ofcom, 2006a, p. 17). In 2006, after some public call boxes had been removed, there were 67,000 in the UK, with BT operating 64,500 (Ofcom, 2006a).

Ofcom (2006a) also redefined a site. The size of the site determines whether BT and Kingston Communications are required to discuss the removal of a public call box with the relevant public bodies. The consultation suggested that the current 100 metres could be extended to 200, 300 or 400 metres, with the latter being eventually picked (Ofcom, 2006a, p. 19). Thus, the distance between public call boxes increased fourfold to what was described as *"five minutes' walk at normal walking pace"* (Ofcom, 2006a, p. 19). The statement also amended which public bodies could veto the removal of the last public call box in an area. In particular, after acknowledging that presence of a large number of public bodies, Ofcom stated that one public authority in each area will wield a local veto though the wider array of authorities will continue to be consulted (Ofcom, 2006a). The procedures around removing public call boxes were also clarified, with guidelines being issued (Ofcom, 2006b). Finally, Ofcom amended the proportion of public call boxes that use cash as a payment mechanism. By amending the proportion of public call boxes using cash from 100 to 70 per cent, this would provide BT and Kingston Communications with flexibility in how it fulfils its universal service obligations (Ofcom, 2006a).

The next consultation by Ofcom on public call boxes did not occur until late 2021. In the 15 years since the previous consultation, not only had mobile phones become more widespread but average monthly prices had fallen – 99 per cent of UK premises were within mobile coverage, 96 per cent of UK adults used a mobile phone and average mobile prices per month were only £10.96 (Ofcom, 2021). Perhaps unsurprisingly given the widespread availability of mobile phones and their relative affordability, use of public call boxes had declined – the volume of calls had declined from 800 million minutes in 2006 to just 7 million in 2020 (Ofcom, 2021). BT and KCOM (the new name for Kingston Communications) operated 21,000 public call boxes between them (Ofcom, 2021), less than a third of the total operated in 2006.

Within this changing context, coupled with the change to public call boxes using IP technology in 2025 (Ofcom, 2021), Ofcom proposed to amend the procedures governing the removal of public call boxes where it is the last remaining one. The amendments would, in effect, protect public call boxes from removal if:

- It is not covered by all four mobile operators
- It is located in an accident or suicide hotspot
- It has made more than 52 calls in the previous 12 months (Ofcom, 2021).

Recognising that there may be other factors at play, Ofcom (2021) proposed another criterion – that a public call box would be protected from removal if *"there is an exceptional circumstance"* that demonstrated a need for its retention (Ofcom, 2021, p. 2). The illustrative examples provided are informative, highlighting how geography may play a role in shaping access to communication technologies on the one hand and how public call boxes may be used to access helpline (that is, support) numbers.

In addition, Ofcom proposed removing the veto that had hitherto been wielded by local bodies (Ofcom, 2021). BT and KCOM would still be required to consult with relevant local bodies, but with the veto removed they would be able to adjust their public call box portfolio – in compliance with the new criteria (above), which would enable some sites to be closed while others are retained. Ofcom acknowledges that the impact of the changes that it proposed would be to increase the number of public call boxes that are removed (Ofcom, 2021, p. 35).

The consultation also addressed the impact on public call box availability of the move towards an IP network. Through connecting public all boxes via the PSTN (public switched telephone network), which is copper based, they were available when power cuts were occurring via the electricity generation grid. This would, however, not be the case when the

network had migrated to IP since electricity supply would no longer be provided via the PSTN. Thus, to ensure that public call boxes could still be used in the advent of a power cut, Ofcom (2021) proposed a number of measures to maintain their resilience.

In the event of a power cut, public call boxes should be available for at least three hours (Ofcom, 2021, p. 40). BT estimated that installing a battery based back-up power supply would cost £300 per public call box, with an annual maintenance cost of £60 (Ofcom, 2021, p. 40). Recognising the scale of the investment needed, Ofcom proposed two options: only those public call boxes likely to be used in the event of a power cut should be provided with back-up power or at least one box in every location should (Ofcom, 2021, p. 40f). Ofcom stated their preference for the first option.

Ofcom proposed changing the services that are available via public call boxes and their use of cash. Ofcom proposed that the current requirement for 70 per cent of public call boxes to use cash would be revoked (Ofcom, 2021), not least because of the declining use of cash in the wider economy. Instead, BT and KCOM would be allowed to remove the cash payment option if the public call box offered free calls or their assessment of the demand by customers to pay by cash was limited (Ofcom, 2021, p. 22).

Finally, the services available via public call boxes would also be amended. Ofcom proposed to amend the universal service obligations so that BT and KCOM could provide free calls from public call boxes (Ofcom, 2021), and where they charged ‘uniform pricing’ should be offered. In other words, if BT and KCOM decided to charge for calls then the prices should not reflect the geographical location of the box. Furthermore, if the public call box offered free outgoing calls, then BT and KCOM would have the option not to allow incoming calls (Ofcom, 2021). Ofcom also proposed that the numbers available from public call boxes “should be amended to remove the requirement for them to offer calls to international, premium rate and other unbundled tariff numbers” (Ofcom, 2021, p. 22).

4. Methodology

This paper draws on data from the replies to the consultation on universal service obligations that Ofcom announced in November 2021 (Ofcom, 2021). The consultation closed in January 2022, with Ofcom announcing its conclusions in June 2022 (Ofcom, 2022a). In all, 23 replies were submitted and then made public. They ranged in length from one page to 22 pages, with 109 pages being submitted in total. The consultation and update amounted to 190 pages, with Ofcom (2022a) inevitably repeating some of the argument presented in Ofcom (2021).

Initially all of the consultation responses were read by the first author. Not only did this ensure that all of the replies addressed public call boxes, but it also enabled the author to familiarise himself with the content (Kaplanidou, Al Emadi, Saga, Diop and Fritz, 2016). Following Franks and Cohen (2012) four areas were identified from the literature that form the conceptual basis of our analysis. The literature here is Batura (2016a) and Ofcom (2021). Although Ofcom (2021) sought views in eight areas, we focus on the responses provided to the first three questions. This enabled four themes to be identified:

- Free calls: Should calls to and from public call boxes be free?
- The ability to pay with cash: Should users of public call boxes be able to pay with cash?
- Amending how public call boxes can be removed: How can public call boxes be removed?
- Resilient public call boxes: How resilient should public call boxes be?

These themes were sufficiently broad to capture the range and diversity of the responses. The advantages of this were threefold. Firstly, it shed light on the complexity of the issues addressed in the consultation. Secondly, it highlighted how the responses differed in their scope, with some being broader in scope than others. Thirdly, these themes enabled 'how' and 'why' questions to be answered (Yin, 2018). The consultation is, therefore, approached as a case study providing insights into how regulatory regimes change, particularly in response to technological change and the co-existence of legacy and modern technologies.

It is worth noting that although some of the responses addressed the proposal to remove faxes from the universal service obligation, these are not considered here due to their relative brevity. Ofcom sought to remove faxes from the universal obligation in late 2022 (Ofcom, 2022b).

5. Responses to the consultation

Free calls

Across the responses, there was considerable support for free calls from public call boxes – see Table 2. Ten responses supported offering free outgoing calls, with some doing so without explanation (e.g., East Ayrshire Council, Strachur Community Council). BT welcomed *"the flexibility to offer free calls"* (BT, 2022, p. 2), and noted that its 'Street Hubs', which already offered free calls, were used significantly more frequently than public call boxes. In 2019, the average 'Street Hub' made 38 times more calls than a public call box (BT, 2022, p. 2).

[Insert Table 2 about here]

Three respondents supported the introduction of free outgoing calls while expressing their reservations. Although KCOM welcomed the proposals outlined by Ofcom, it noted that aside from 'free to caller' numbers it did not offer free calls on its public call boxes (KCOM, 2022, p. 2). Another respondent sought more details regarding who could access the service and where they could dial (Monymusk Community Council), while another was concerned that the availability of free calls would be abused (Name Withheld 2). It was also suggested that the free services available from public call boxes are *"well publicised and marketed and that boxes display this information"* (Scottish Borders Council), with this also being implicit in the response from the National Society for the Prevention of Cruelty to Children (NSPCC). The NSPCC stated that although calls to their service were free, some users of its helpline may believe that it was not the case.

Ofcom also consulted on removing the requirement for public call boxes to offer free incoming calls. Seven respondents supported the removal of free incoming calls (e.g., BT, East Ayrshire Council, Name Withheld 3). Interestingly, BT noted that only 15 per cent made through public call boxes were incoming (BT, 2022, p. 2). Although Highland Council was positive towards the change, it expressed concern that access to emergency numbers should not be restricted in any way as a consequence. Four respondents objected to the proposals. Helpline objected noting that *"in some safeguarding circumstances there may be a need for an organisation to call back a person in crisis who may have disconnected the call. This is particularly important in areas which see a high frequency of people taking their own life"*.

10 respondents did not address the proposal to remove free incoming calls. It is somewhat surprising that the Communications Consumer Panel, the body that represents consumer interests within Ofcom, did not address the issue of free (incoming and outgoing) calls in their response.

The ability to pay with cash

As can be seen from Table 3, 12 respondents did not address this issue. Of those that did, almost all supported the proposal of Ofcom to amend the proportion of public call boxes that accept cash. Three of those supporting the proposal did so without offering any comments (East Ayrshire Council, Name Withheld 3, Strachur Community Council) while BT noted that *"the cost of providing cash payment facilities is steadily increasing, particularly as call volumes decline"* (BT, 2022, p. 3). Furthermore, not only did BT welcome the flexibility that the change would bring about, but also expected that the benefits from offering free calls would exceed those from developing alternative, that is, non-cash, payment mechanisms.

[Insert Table 3 about here]

Several respondents, while positive in tone, suggested that BT and KCOM should seek further guidance from the local community when removing the ability to pay with cash from a public call box (Monymusk Community Council, Shropshire Council). In other words, BT and KCOM should engage with local communities to determine whether there is an on-going need for cash before removing this payment option. The advantages of cash payments were highlighted in the responses, with one stating that this *"offers a discreet way for a person to access a helpline"* (Helpline Partners) and another noting that *"not everyone has a card"* (Name Withheld 4). Helpline Partners stated that the impact of the move away from cash could be mitigated through ensuring that access to some numbers from public call boxes was free.

Although KCOM *"welcomed"* Ofcom's proposal (KCOM, 2022, p. 2), it also expressed some concerns as well. As cash is the only payment mechanism available on KCOM's public call boxes, they argued that if they wanted to remove this option then they

would have to operate an alternative in parallel to meet Ofcom's removal criteria – this was described as being *"costly and inefficient"* (KCOM, 2022, p. 2). KCOM also stated that the proposals did not reflect either the declining use of cash or its commercial interests to ensure that its public call boxes are used.

Amending how public call boxes can be removed

15 responses supported, albeit to different degrees, the proposals – see Table 4. Three responses supported the proposals without offering any explanation (Name Withheld 1, Name Withheld 3, Strachur Community Council), with another welcomed the certainty that they create *"provided that the required consultation with local authorities is not 'token'"* (Comms Council UK). Interestingly, although the Comms Council UK welcomed the certainty that the proposals would bring, they then argued that they were incompatible with the UK's international obligations.

[Insert Table 4 about here]

Within those responses offering conditional support, a couple of respondents welcomed the strengthening of the removal process before critiquing elements of it (Highland Council, KCOM, NSPCC). Weak or non-existent mobile coverage was mentioned by eight responses – see Table 5. Communications Consumer Panel sought greater insight into how BT and KCOM measure mobile coverage provision and suggested that such information should be in the public domain, while Highland Council stated that the onus should be on BT to provide the necessary evidence to justify the removal of public call boxes. BT described the provision of public call

boxes in areas of partial mobile coverage, that is, where one to three mobile operators have coverage, as *"unnecessary and disproportionate"* (BT, 2022, p. 11).

[Insert Table 5 about here]

While some responses agreed with the reasonable use criteria (BT, Highland Council, KCOM), the number of calls that this would entail was questioned (BT, East Ayrshire Council). BT (2022, p. 8) states that a public call box needs to make 494 calls per year to break even. 120 calls per year, which is the usage criteria suggested by Ofcom that BT supports, would thus only enable some partial cost recovery while enabling public call boxes to be retained in areas where they are required.

Others noted that it was important to look at the types of calls being made (East Ayrshire Council, Helpline Partners, New West End Company). Several respondents argued, in essence, that the type of call was more important than the number of calls (East Ayrshire Council, Helpline Partners, NSPCC). Helpline Partners explains its position as follows: *"Should a call box make just a few calls each year, but to helplines such as Samaritans, Childline or Domestic Abuse Services, then it has demonstrated the value and importance it has".* NSPCC noted that *"prior accident and suicide hotspots are not indicative of future issues, and, vice versa, no (sic) prior use does not indicate there will not be a need in the future"* while BT objected to providing public call boxes in accident hotspots (BT, 2022). Highland Council stated that public call boxes should be provided at accident and suicide hotspots irrespective of the mobile coverage available.

Ofcom (2021) also proposed that public call boxes could be removed in exceptional circumstances. Highland Council wrote in their submission that these should be defined and not left to the interpretation of BT, while New West End Company sought their further

clarification to prevent their misuse. In contrast, BT sought their removal, stating that *"the inclusion of a subjective criteria on 'exceptional circumstances' linked to "local factors" removes all certainty and clarity from the process and potentially re-introduces the 'local veto' via the back door"* (BT, 2022, p. 9).

Five responses disagreed with the proposals suggested by Ofcom. One respondent felt that there was no need to consult, stating: *"You are proposing very sensible laws for our country to keep certain PCBs. BT will argue against them for cost reasons."* (Name Withheld 4) while two others (Lamont, Mundell) were concerned about the removal criteria being proposed and highlighted those proposed by Scottish Borders Council. In their response, the Scottish Borders Council stated that *"there is no real acknowledgement in the Ofcom proposals that public call boxes play a vital part of the resilience, emergency and community safety infrastructure of local communities".* They proposed their own criteria, which they described as being *"more appropriate in a rural context"*, that included: the quality of mobile coverage; proximity to main roads, outdoor activity routes, the coast and fresh water; usage; and whether the public call box is the last one remaining in a particular location (Scottish Borders Council).

A second local authority, Shropshire Council, also objected to the proposals from Ofcom. The response begins by asserting that it did not invite Ofcom to reduce its role, before noting that the 400 metre distance between public call boxes can cause problems as *"it does not account for the local geography"* (Shropshire Council). The council also objected to the proposals that would allow BT and KCOM to remove unprotected public call boxes without resorting to the removal process, noting that the proposals were discriminatory. The response also suggested changes to the criteria, expanding their scope and elaborating the processes that BT and KCOM are required to follow. Not only would these suggestions embed the local authority in any decisions, but they would necessitate the collection and use of more nuanced data and include a new category – ongoing social use – in the process. It was also noted that

the *"exceptional circumstances"* criteria would benefit from further elaboration. Finally, Shropshire Council noted that there are differences between local authorities and, as a consequence, how they have exercised the veto will also differ (Shropshire Council). In other words, they did not recognise the inconsistent application of the local authority veto as a problem as Ofcom did.

The submissions of three respondents did not clearly address this consultation question. One suggests that Ofcom's proposals are inconsistent with its international obligations (Simwood), while the other two focused, more or less entirely, on the issue of the ability of public call boxes to withstand power cuts (Luccombe Paris Council, Reid).

Resilient public call boxes

Three respondents supported Ofcom's proposal for public call box resilience without comment. In contrast, 14 respondents supported the desire for greater resilience but provided elaboration of their positions – see Table 6. Six responses highlighted the role of public call boxes where mobile coverage is poor (e.g., Lamont, Luccombe Parish Council, Name Withheld 4), while 14 respondents commented on the impact of storms and power cuts (e.g., Name Withheld 2, Reid, Shropshire Council). Many of these responses noted the longevity of power cuts, especially when compared to the three hours of back-up power that Ofcom proposed (e.g., Communications Consumer Panel, Helpline Partners, Monymusk Community Council, Reid).

[Insert Table 6 about here]

A handful of responses noted how the resilience requirements should be tailored to the specific characteristics of where the public call box is located (e.g., Luccombe Parish Council,

Name Withheld 2, Mundell, NSPCC, Scottish Borders Council). In their response, the Highland Council suggested that the local authority has a role to play in shaping locally specific resilience requirements, in a process similar to that applicable to the removal of a public call box. Both Reid and Highland Council draw attention to the need to ensure that mobile towers are provided with back-up power, not least because the availability of mobile coverage negates the need for public call boxes to be provided with resilience. NSPCC stated that any public call box located at an accident and / or suicide hotspot should be provided with resilience.

Although BT did not reject the need for resilience, its response does raise a number of objections (BT, 2022). It stated that, due to the availability of other means of communicating, *"there is a limited need for PCB (public call boxes) to provide service in the event of a power cut"* (BT, 2022, p. 10), and that Ofcom's proposals should be limited to where there is a dependency on public call boxes. Furthermore, BT disagreed with Ofcom's suggestion that one public call box in each location is resilient as this did not reflect the availability of mobile coverage in many locations (BT, 2022, p. 11).

Two responses objected to Ofcom's proposals. Echoing comments above, Name Withheld 1 described the provision of three hours of back-up power as being *"entirely inadequate"* given that power cuts can last for several days. KCOM objected to some of the proposed obligations that would be placed on the company. In particular, it described the requirement to assess and identify protected public call boxes and then provide them with back-up power as *"disproportionate"* (KCOM, 2022, p. 5), not least because it operates in an urban environment where alternative means of communications are available. KCOM also noted that its public call box operations were loss making, with more calls made to directory enquiries than emergency numbers (KCOM, 2022, p. 5).

6. Discussion

Public call boxes are a long-standing component of universal service obligations within the UK telecommunication market. They provide a multi-faceted means of communications. Prior to the wide and affordable availability of mobile telecommunication services, they provided a means of accessing telecommunication locations outside of the home or business – through their presence on the high-street, they were readily accessible by individuals. Furthermore, they provided a means through which those who could not afford a fixed line at home could access telecommunications services and enabled those wishing to call emergency and helpline numbers a means to do so.

However, the usage of public call boxes has declined as mobile telecommunications services have become more pervasive and affordable. The number of public call boxes has fallen, as has their usage (as measured by minutes). And the range of services that are accessible via a public call box is limited, especially when compared to those available through a smartphone. Reflecting these contextual changes, as well as the need to migrate public call boxes to an IP based network, Ofcom proposed amending the regulatory regime pertaining to public call boxes (Ofcom, 2021) and then after a consultation amended their proposals (Ofcom, 2022a). The new regulatory regime that emerged replaced the local authority veto with a set of criteria governing the removal of public call boxes, widened the range of services that were available and sought to ensure their availability in the event of a power cut (Ofcom, 2022a).

Although it was expected that these changes would result in fewer public all boxes, the consultation – in terms of both the replies as well as statements by Ofcom – highlighted the (continued) useful role of public call boxes. Sometimes this usefulness is based on geography and exceptional circumstances – for example, a lack of mobile coverage or the impact of storms that result in public call boxes being the only (reliable) means of communications in some areas

and contexts. On other occasions, however, the value of public call boxes is more difficult to quantify but nonetheless clear to many – through, for instance, enabling those in need to access a helpline or contact the emergency services in the advent of a crash or flooding.

It is, therefore, possible to understand the value of public call boxes in terms of the lives saved, changed or positively affected. Not only does this represent a deviation from the economic analysis that typically occurs when assessing universal service obligations, but it raises difficult, perhaps intractable, questions around how to balance the possibility of a public call box saving a single life at some point in the future while being financially loss-making throughout. Such issues complicate any assessment of the usefulness and role of public call boxes within the context of a set of universal service obligations designed prior to the widespread availability of mobile telecommunication services.

These two views of public call boxes – useful but costly – help explain why public call boxes have stubbornly persisted in the UK. They may be an 'old' technology, but one that remains useful, albeit in a diminishing number of use cases and contexts. At present, they are available when mobile coverage is inadequate or when the user's handset lacks power – public call boxes, in other words, compensate for the shortcomings of a more widely available and arguably 'better' technology.

Setting aside the challenges of determining the availability and quality of mobile coverage, any improvement would impact on the assessment of public call boxes in many different locations and contexts. In 2020, the UK's four mobile network operators agreed to expand their 4G coverage to 95 per cent of the 'landmass' (that is, geography) by the end of 2025 (UK Government, 2020). The £1 billion investment needed to fund this expansion in coverage would come, more or less equally, from the four mobile operators and the UK (UK Government, 2020) and would "close almost all partial not-spots". Although this initiative would expand coverage, not all of the UK's landmass would be covered – all operators would

be present across 84 per cent of the country, with at least one in 95 per cent (Hutton and Baker, 2022). In Scotland, where a number of contributors to the consultation were based, the comparable figures are lower – all mobile operators would be present across 74 per cent of the nation, with at least one in 91 per cent (Hutton and Baker, 2022).

Within this context of improving mobile coverage, one of the key arguments for their retention – to compensate for a lack of mobile coverage – will be diminished. However, as the whole country will not be covered, the arguments for public call boxes will reflect an increasingly specific set of local contexts – quite simply, the arguments for public call boxes are wider than just a lack of mobile coverage. Public call boxes offer a degree of immediacy and anonymity that be may helpful when calling the emergency services or accessing a helpline, and they are currently available in the event of a power cut. Improving the susceptibility of the mobile telecommunications infrastructure to power cuts would go some way towards further diminishing the role of public call boxes, but it would not result in their outright replacement as the issue of (re)charging devices is not addressed. While some households would have their own generator or battery capacity, it is likely that many would not.

Arguably the greater challenge to the role of public call boxes during a power cut comes from technological change. Public call boxes are soon to be migrated to an IP infrastructure, with the consequence that they are susceptible to power cuts. Ofcom (2022a) has sought to mitigate this and improve their resilience. However, the suggested three hour battery life that will be required is considerably less than what it is replacing. Thus, technological change, coupled with the response of the regulatory regime, is actually undermining one of the key characteristics of public call boxes that provide value in exceptional circumstances.

The continued but diminishing role of public call boxes inevitably raises issues of cost. As noted above, revenues and usage have declined. While changes to the need for cash as a

payment mechanism will reduce costs, the migration to IP based provision also needs to be taken into account. Not only is new equipment required but back-up power mechanisms need to be installed. As a result, the cost structure of public call boxes will change, probably for the worse given trends on the one hand and the concerns expressed by respondents to the consultation on the other. On this basis, it is reasonable to assume that the number of public call boxes will further decline.

Having said this, the financial burden of fulfilling the universal service obligation in the context of public call boxes falls solely on the designated providers. Although Ofcom argues that the sums involved are small, it is worth noting that the provision of other telecommunication infrastructure in rural or remote areas has been supported by UK government intervention (for example, involving explicit subsidies). This intervention has funded the provision of gigabit (broadband) infrastructure as well as expanded mobile coverage and provided a broadband 'safety net' of 10 Mbps. There has been no equivalent intervention for public call boxes. As a result, the financial responsibility for the fulfilment of the universal service obligations, which originate from an earlier assessment by the telecommunications regulator, remains solely with BT and KCOM.

Placing the financial responsibility solely on BT and KCOM sits uncomfortably with the arguments made by many respondents to the consultation that highlighted the wider (socio-economic) value of public call boxes. Both companies could receive financial support from the UK government. The support could be limited until mobile coverage has been improved, and directed towards those locations where accidents or suicides occur. The level of support would be modest, especially when compared to that has been provided in other contexts, due to the low number of public call boxes that currently exist. Alternatively, public call boxes could be funded by a levy on all telecommunication operators, though given comments expressed during the broadband universal service obligation this is unlikely (Stocker and Whalley, 2019).

7. Conclusion

This paper has focused on universal service obligations within the UK. More particularly, it has explored the role of public call boxes within universal service, drawing on a recent consultation (Ofcom, 2021, 2022a) to investigate their current role, how they are perceived and their future. Public call boxes are an 'old' technology within today's complex and dynamic, broadband-fuelled telecommunications industry, with their universal service obligations reflecting a period when mobile communications were neither as widely nor as cheaply available as they are today. Although the number and use of public call boxes has declined, the consultation we examined did not seek to remove them from the universal service obligation as it did with faxes (Ofcom, 2022b) but rather to amend the regulatory framework in which they exist.

The responses to the consultation highlight the complexity of evaluating the role of public call boxes within universal service. Our analysis illustrated their multi-faceted nature, complementing the availability of mobile telecommunications – an arguably 'superior' technology – while providing socio-economic value that exists but which is difficult, if not impossible, to ascribe a monetary amount to. We identify a number of socio-economic arguments for retaining public call boxes that clash with the technical and economic characteristics of their provision. In other words, the continued role of public call boxes can be found at the confluence of two sets of countervailing arguments: socio-economic on the one hand and technical and economic on the other.

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Table 1: Conditions imposed on BT and Kingston

Condition	**BT**	**Kingston**
Provision of telephony services on request	Y	Y
Schemes for consumers with special social needs	Y	Y
Provision of call box services	Y	Y
Provision of relay service for telephone users	Y	
Tariffs for universal service	Y	Y
Itemised billing	Y	Y
Maintenance and supply of a directory information database and directories	Y	
Quality of service	Y	Y

Source: Oftel (2003)

Table 2: Free outgoing calls

Yes (6)	**Yes, but … (8)**	**Unclear answer (1)**	**Did not answer the question (8)**
BT	Communications Consumer Panel	High Council	Comms Council UK
East Ayrshire Council	Helpline		IHBC
Name Withheld 3	KCOM		Lamont
NSPCC	Monymusk Parish Council		Luccombe Parish Council
Shropshire County Council	Name Withheld 1		Mundell
Strachur Community Council	Name Withheld 2		New West End Company
	Name Withheld 4		Reid
	Scottish Borders Council		Simwood

Abbreviations:

IHBC = Institute of Historic Building Conservation
NSPCC = National Society for the Prevention of Cruelty to Children

Source: responses to the consultation

Table 3: The use of cash as a payment mechanism

Yes (4)	**Yes, but … (5)**	**No (2)**	**Did not answer the question (12)**
BT East Ayrshire Council Name Withheld 3 Strachur Community Council	Helpline KCOM Monymusk Community Council Name Withheld 2 Shropshire County Council	Name Withheld 1 Name Withheld 2	Comms Council UK Consumer Communications Panel Highland Council IHBC Lamont Luccombe Parish Council Mundell New West End Company NSPCC Reid Scottish Borders Council Simwood

Abbreviations:

IHBC = Institute of Historic Building Conservation
NSPCC = National Society for the Prevention of Cruelty to Children

Source: responses to the consultation

Table 4: The removal of public call boxes

Yes (3)	**Yes, but … (12)**	**No (5)**	**Unclear answer (3)**
Name Withheld 1 Name Withheld 3 Strachur Community Council	BT Communications Consumer Panel Comms Council UK East Ayrshire Council Helpline Partners Highland Council IHBC KCOM NSPCC Monymusk Community Council Name Withheld 2 New West End Company	Lamont Mundell Name Withheld 4 Scottish Borders Council Shropshire Council	Luccombe Community Council Reid Simwood

Abbreviations:

IHBC = Institute of Historic Building Conservation
NSPCC = National Society for the Prevention of Cruelty to Children

Source: responses to the consultation

Table 5: Which removal criteria were mentioned by respondents?

Respondent	Mobile coverage	Suicide hotspot	Reasonable need	Exceptional circumstances
BT	Y	Y	Y	Y
Comms Council UK	Y			
Consumer Communications Panel	Y	Y	Y	
East Ayrshire Council	Y	Y	Y	
Helpline Partners		Y	Y	
Highland Council	Y	Y	Y	Y
IHBC	Y			
KCOM	Y	Y	Y	
New West End Company			Y	Y
NSPCC	Y	Y	Y	

Abbreviations:

IHBC = Institute of Historic Building Conservation
NSPCC = National Society for the Prevention of Cruelty to Children

Note:

Only 10 of the 23 respondents to the consultation commented on removal criteria.

Source: responses to the consultation

Table 6: The resilience of public call boxes

Yes (3)	**Yes, but … (14)**	**No (2)**	**Did not answer the question (4)**
East Ayrshire Council Luccombe Community Council Name Withheld 3	BT Consumer Communications Panel Helpline Highland Council Lamont Monymusk Community Council Mundell Name Withheld 2 Name Withheld 4 NSPCC Reid Scottish Borders Council Shropshire Council Strachur Council	KCOM Name withheld 1	Comms Council UK IHBC New West End Company Simwood

Abbreviations:

IHBC = Institute of Historic Building Conservation
NSPCC = National Society for the Prevention of Cruelty to Children

Source: responses to the consultation