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Key Ethical Issues Related to Covid 19 Vaccination: *Personal Choice vs. Greater Public Welfare and Informed Consent*

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Abstract

Vaccination against various diseases has been widely practised for more than a century and on a more limited scale its use in a variety of forms stretches back far longer. During earlier eras disease spread more slowly along shipping lanes on water and traditional transport routes on land. Today, in an era of air transport, contagion spreads far more rapidly. Travelling far more rapidly (indeed instantaneously) is the spread of misinformation that hinders vaccination which can, in the instance of Covid-19, reduce disease impacts, including rates of severe illness and death.

This paper explores the ethical issue of informed consent in the context of the contest between personal choice and the greater public welfare. It also refers to a number of low, middle- and high-income countries where vaccine hesitancy, and to a lesser extent refusal, has been fed by misinformation on a scale not previously observed but made possible by the proliferation of modern technology. This 'campaign of ignorance' has further undermined trust in governmental health bodies and their attempts to implement quarantine and other measures such as vaccination that had already been damaged by early variations and vacillation in governmental approaches around the globe due in part to a reluctance by some governments to take actions that would have economic repercussions but also by the necessary evolution of their approaches as more became known about the disease and its variants.

The paper examines the historical background and the current situation and finds that more must be done to restore or increase trust levels between citizens and governmental authorities, including the dissemination of high-quality accurate information in a form relevant to readers/viewers. While potential side-effects of vaccines must be disclosed to ensure informed consent, their incidence should also be clearly communicated (e.g., in vaccine information statements) so that clients/patients are aware that a risk is 1 in 100 or 1 in 1000 or 1 in 2 million etc.

Governments are urged to learn from their experience and better prepare for inevitable future pandemics to minimise vaccine hesitancy and refusal and maximise its acceptance where evidence is overwhelming as to the benefit to the community. Informed consent is part of the context of efforts to use vaccination to contain or eradicate any disease. Nevertheless, while better information for clients/patients/consumers may reduce vaccine hesitancy/refusal, it is unlikely that it would but eliminate the need for mandating vaccination in some circumstances for the benefit of the broader community, although strict quarantine of those reluctant to accept it is an alternative but one not generally accepted by those reluctant to be vaccinated. The 'information war' is one that needs to be won to increase the voluntary uptake of vaccination in the context of voluntary informed consent.

Key words: Personal choice, Public welfare, Informed Consent, Law

Introduction

Vaccinations are not a new concept. Inhalation of contagious material had been practised as a means of preventing the worst manifestations of smallpox and deaths from it in China (and isolated communities in the Britain) in the 16th century and perhaps earlier (Boyleston 2012). Vaccination for smallpox had also been practised in North Africa and the Ottoman Empire in the 17th century (Boyleston 2012). It became more accepted in the Western world in the 18th century where it was regarded as an innovation. It has long been key to tackling contagious diseases. A prime example would be the eradication of smallpox through vaccination through the use of various Orthopoxvirus spp. This replaced

an earlier practice of vaccination whereby material containing the smallpox virus (variola virus (VARV) itself had been introduced into the body through the skin via scarification or by inhalation (Carroll 2011). While this produced a lower death rate below that expected in natural acquisition of smallpox, it was not as effective as cowpox (cowpox virus (CPXV) another orthopoxvirus) and its successors which produced greatly reduced death rates among those subsequently exposed to smallpox. About 30% of those who contracted variola major died (and about 2% from variola minor) (CDC, History of Smallpox, 2021; Ochmann & Roser 2018). The smallpox vaccine (CPXV) first used in 1796 was similarly introduced to the body via scarification. It was replaced in the 1800s by the vaccinia virus (VACV), very close relative to cowpox virus. In the second half of the 20th century, an international campaign intensified and achieved eradication, with the last natural transmission recorded in the 1970s (Anyiam-Osigwe 2021; CDC History of Smallpox, 2021).

Through the herd immunity achieved by vaccination, smallpox is now no longer a prominent disease. The only samples of variola remain stored in just two laboratories, one in the United States and the other in Russia (CDC, Research, 18 Oct. 2021). In 1980, WHO declared it eradicated (WHO). Nevertheless, vaccines have been a controversial topic since the push for the smallpox vaccine back in the 19th century. Indeed, some argued that those vaccinated might acquire bovine characteristics; cartoonists 'had a field day' portraying popular fears, medical establishment opposition etc. (Carpenter 2021; Amsen 2020). Poliomyelitis has been almost eradicated similarly by vaccination although conflict-interrupted programs and misinformation have resulted in re-emergence of disease in Afghanistan and Pakistan, and there have been cases in the Asia Pacific. The goal remains eradication.

In the current era, vaccination is widely accepted for a number of diseases of bacterial and viral origin. The former includes bacterial pneumonia (cause: *Streptococcus pneumoniae*), diphtheria (*Corynebacterium diphtheriae*), whooping cough (*Bordetella pertussis*), and tetanus (*Clostridium tetani*). The latter includes poliomyelitis (poliovirus), viral pneumonia (various viruses), chicken pox / shingles (varicella zoster virus), influenza (influenza virus spp.), mumps (Mumps orthorubulavirus), measles (Measles morbillivirus), rubella (rubella virus) and herpes (Herpes simplex virus type 2) (Health, Department of (Cth of Australia) 2021). Some vaccines have been opposed more than others over time (Hussain et al. 2018), sometimes with people expressing unfounded fear of a threat to reproductive health and confounding mild symptoms prevalence with those of rare more severe reactions. The proliferation of vaccines and administration to young infants and children may have contributed to some unease with rare impacts widely publicized. Their success in reducing incidence and severity of disease may also have worked against vaccination, especially in developed countries where people were no longer familiar with the worst effects of particular diseases (e.g., polio, whooping cough) or as elsewhere have accepted a 'nature' or 'faith' centered philosophy of health management where vaccines may be seen as unnecessary or undesirable. In the developing world, reliance on traditional remedies and fear of western medical innovation are fed by misinformation emerging from developed country sources and spread rapidly across vast distances among populations which are now globally connected online. Into this space erupted the recent and ongoing Covid pandemic.

The COVID-19 coronavirus first emerged in Asia and has spread worldwide, creating a global pandemic from 2019 to the present day. Following allocation of unprecedented research funding, existing research into vaccine development escalated, and by the beginning of 2021, several vaccines had been approved in various jurisdictions (e.g., Russia, China, US, UK, Australia, Europe) for distribution. The COVID-19 vaccines have caused quite a controversy not just among the 'anti-vaxxers' (this includes persons who oppose vaccination 'in principle' as well as those who may only oppose only more recent vaccines for various reasons) but also others from various sectors who expressed concerns about different aspects of vaccination. This paper will cover the research on the ethical issues related to vaccinations, specifically COVID-19 vaccines. This study will focus on two sectors of the ethics of vaccinations: personal choice vs. the greater public welfare and informed consent.

Personal choice vs the greater public welfare

The world today is gripped by a crisis related to the COVID-19 and its emerging variants. Each country, each city is trying its best to cope with the health, economic and social impacts of the contagion. Varying approaches taken over time by governments reflect not only the increasing knowledge about Covid-19's severity (not simply a normal 'cold' or 'flu' as some appeared to hope and then continued in error to maintain despite the surge in cases and rising number of deaths that outstripped 'normal' flu events) but also the degree to which a government chose to prioritize 'maintaining the economy' over taking measures that while lessening health impacts were feared would substantially damage economic life (for a discussion of this as a false dichotomy, see Escandòn et al, 2021; Jung et al, 2021). Yet failing to prioritize health could severely impact the economy as more and more employees fell ill, health systems were overwhelmed and failing confidence reduced consumption (Smithson 2020). Others contend that it is a 'false dichotomy' as lockdowns delay diagnostics and treatment and also generally in the longer term impact the poor in wealthy economies at a scale yet to be measured (Pronk & Kassler 2020), and also developing and least developed countries more generally.

Governments are establishing measures to reduce the risk of the pandemic by encouraging people to get vaccinated to protect themselves and those around them by reducing the speed of spread as well as the seriousness of disease impacts that threaten to overwhelm health services in both the developed and developing world as wave after wave of infection by Covid-19 and its emerging variants affect each country. The ability to achieve widespread vaccination is in part determined by the availability of vaccines in any given country. Wealthier countries took precedence as developers sought to recoup investment; less developed and least developed nations had far less access to life saving vaccines and treatment options while also having fewer doctors and hospital beds per hundred thousand of population. It is only in late 2021 that the call for suspension of patents has fallen on less than deaf ears but the TRIPS waiver still faces opposition, while governments appear to struggle to even meet their promises of donations of doses to developing and least developed countries via 'Covax', prioritizing their own third doses and 'roll out' to younger less vulnerable population segments over the needs of vulnerable populations in developing and least developed countries. These ethical issues are not examined in detail here but should not be ignored as availability affects ability to even 'have a choice' of vaccination. It may also permit a 'greater space' for misinformation to develop where vaccines are lacking (Hadebe 2021). In Tanzania, for example, the government seemed to initially deny the presence of the virus (Buguzi 2021b). The then president, after a national period of prayer, declared the nation 'Covid-free'. Comment on Covid deaths was banned in the media, so doctors and others were effectively gagged; health workers practiced without being provided personal protective equipment supplies. The president's apparent confidence and government policy remained unchanged for months, even after the Tanganyika Law Society issued a statement that 25 members had died in a month, and the Catholic Church urged the government to change its stance after 25 priests and 60 nuns died in a two-month period following a brief illness associated with breathing difficulties, and the Episcopal Church advocated policy change (Buguzi 2021a). The president suddenly died, having had a change of heart regarding vaccination (around the time he was himself allegedly ill) but did not live long enough to implement it. Policy then changed more substantially with vaccination now supported. However, having abjured vaccination and previously supported only 'natural' preventive methods, the administration found that when later more fully reversing their stance under a new president, that the earlier policy had fueled continued vaccination hesitancy and refusal (Buguzi 2021a; Buguzi 2021b). Accepting Covid-19 vaccination has been and still is almost seen as unpatriotic (Davis 2021). So damaging has been the initial stance that in what had been one of the African states previously successfully highly vaccinated against childhood diseases that even with vaccines are increasingly available, some fear that take-up of vaccination will be less than optimal (Buguzi 2021a; Buguzi 2021b).

Where vaccines are available, the question of the competing interests of those wanting to get vaccinated and those who prefer not to is a difficult one and the answer (and the ethics of any answer) is subject to ongoing debate. Even though government bodies generally want to accord people the right to choose what is best for them, during a pandemic situation the reasoning shifts to an emphasis on the overall protection of the population as a whole, where the threat to others' continued enjoyment of life itself or health is weighed against the rights of individuals to 'bodily integrity' and self-determination and found by governments to have greater importance. Historically too, quarantine/isolation

has been imposed in times of pandemic with the freedom of movement of individuals restricted to reduce the risk to others (e.g., imposition of quarantine regulations, isolation of persons affected). In terms of mandatory imposition of vaccination, it has been noted that US President George Washington imposed the first mass military inoculation (an early form of vaccination for variola major or smallpox) in 1777 during the Revolutionary War, which markedly reduced his army's vulnerability to the disease and subsequent death rate (Filsinger & Dwek 2021). It was a policy that was not universally welcomed then; nor, despite the progress since, now.

The balance between personal choice and protection of at-risk members in a population differs based on social and cultural beliefs. Most governments have made it mandatory to wear masks and practice physical distancing when indoors and permit a little flexibility when outdoors. Some have made vaccination mandatory where a person works in close contact with vulnerable populations (e.g., frequently, aged care, health care; less often, education; in a few jurisdictions their entire public service sector). Critics of such measures often ignore that vaccination for various diseases has frequently already existed in such settings as health care and education. When they are aware of this, it is the recency of the vaccine development that tends to cause them great reservation, with critics often referring to the Covid-19 vaccines as 'experimental', despite their building on existing research and having undergone extensive testing prior to release. Some reluctant to accept an mRNA vaccine have been reported to be more accepting of a more 'traditional' vaccine, but that has yet to come to market (Attwooll 2021). Distortion of information also affects vaccine acceptance. Some ill-informed critics appear to confound mild and major complication rates, publicize rare serious complications and deaths associated with vaccination while failing to acknowledge that deaths in the absence of vaccination are far higher and ignore statistics on 'excess deaths' (this last available only for developed states where relevant data is routinely collected; figures for developing and least developed countries can be expected to be grossly underestimated) (Giattino et al. 2021).

Some individuals who do not want to have their freedom curtailed, however, not only delay or reject vaccination but are willing to take risks by not opting for the basic prevention methods that the governing bodies have recommended or mandated. These include social distancing and mask wearing where social distancing is difficult to achieve (as on public transport, in shopping-centers). This omission on their part poses numerous risks for themselves and others, and the governing bodies face substantial challenges. They need to balance the risk to society versus individual rights. How should individuals balance their own rights and at the same time not be a risk to others and their own family members?

When the enormity of the current pandemic became clear, with its severely affected victims beginning to crowd hospitals (and intensive care units) then mortuaries, with bodies consigned to funeral pyres (or even rivers) or filling graveyards, governments had to introduce or reinforce measures that sometimes seem to curtail individual freedom to slow down the transmission of the virus and in turn reduce mortality that is associated with COVID19 (Oaten & Patidor 2020). 'Lockdowns' were introduced in both the developing and developed world to varying degrees especially in the period where research was being undertaken and/or vaccines unavailable, but later to facilitate the roll-out of vaccination across populations, in a bid to reduce illness. In India, millions of workers walked to their home states or rural homes when the country abruptly closed down its industry and transport in the March 2020 21-day lockdown in a bid to stop the spread of Covid-19 and a rising death toll (Biswas 2020). However, this could have served to spread the disease even further. (Shutdowns again occurred about 12 months later in 2021 as employment opportunities in the cities declined due to the downturn in trade due to the pandemic, only this time, transport continued to operate) (Kakade 2021). A higher level of excess deaths has been recorded for the delta variant than for the initial wave of Covid-19 (Beaney, Clarke & Jain 2021) in India and Bangladesh (Daria & Islam 2021). With successive waves of contagion now evident, earlier strategies are being revisited e.g., imposition of mask wearing, social distancing as well as new strategies (Bhaduri 2021; Frayer & Pathak 2021).

An excellent example of the adoption of an innovative strategy that seemed to curtail individual freedom to slow virus transmission and thereby reduce mortality was seen in France, where the fourth Covid-19 wave in August 2021 saw the government introduce a COVID-19 'health pass' for citizens fully vaccinated against the virus or those who had recently recovered from the disease. These health passes were designed to help people stay protected by separating

them from otherwise unnecessary contact with those who had not had the vaccine and were therefore more prone to contracting/spreading the virus. The health pass acts as a ticket to access public areas such as swimming pools, cinemas, restaurants, trains, air travel, bars etc. The government introduced these measures to encourage people to accept the vaccine. There were repercussions as some citizens were not happy with this and protested across France to make their voices heard (Reuters 2021b). But the government's strategy did have a positive impact overall: there was a definite increase in the number of individuals who were vaccinated after the health pass was introduced. Subsequently, in November 2021, a fifth wave (fueled by a new Omicron variant) erupted, involving both the vaccine hesitant (the unvaccinated now comprising less than 10% of the eligible population) and those whose earlier vaccination acquired immunity was waning. This again has caused concern to overburdened health systems and their tiring workforces in France and elsewhere. It was posited that the situation might require a third and perhaps even a fourth vaccination for the already vaccinated to reduce impacts (Reuters 2021a). 'Breakthrough' infections plus the extreme contagiousness of (the perhaps milder) Omicron variant fueled further concern on one hand and dissent on the other. For health authorities it was a reminder that variants could emerge, either more or less contagious and more or less severe in impacts; and in a world connected by air travel spread could be almost lightning fast. For some critics, the need for yet further vaccination undermined claims to vaccine effectiveness and the need for a 'vaccine passport'. They appealed for less rather than more 'segregation', and more rather than less 'freedom' for all citizens. Governments in France and Germany agreed that their countries had perhaps come to rely too heavily on vaccination and began to reintroduce social distancing and mask mandates in the face of the latest wave (Reuters 2021a) while England has reintroduced working from home, mask mandates and proof-of-vaccination/testing — a broad multi-pronged approach (Cabinet Office and Department of Health and Social Care (UK) 2021). Nevertheless, mandatory vaccination has the effect of increasing vaccination among vulnerable persons but increasing resistance among the hesitant or vaccination-averse (Eshun-Wilson et al 2021).

In India, the COVID-19 vaccination rollout had been an ongoing ethical issue for several months for many reasons. It should, however, be recognized that 'personal choice' was initially a luxury enjoyed by those in the developed world where vaccines were available far earlier and more widely than in the developing world (Chagler & Pai 2021). In India, vaccination was initially only for those who could afford it, as people had to pay for vaccinations. This meant that whoever could not afford to pay for the vaccine would not get it. It was only in late 2020, that the government of India made the COVID-19 vaccine free for all, as the number of affected individuals reached record heights. Unfortunately, this also led to massive gatherings of locals at all available hospitals as they waited in line without social distancing for vaccination. This provided an opportunity for spread and, again, not all citizens want to be vaccinated. People in certain rural areas still do not believe that the vaccine protects them in any way and hence many villagers are still not vaccinated. This is mainly due to the personal/cultural beliefs of the locals in those areas, while here and elsewhere around the developing and least developed world, lack of supply severely restricts vaccination roll-out (Padme 2021). In cities and among otherwise educated people, vaccine hesitancy or even refusal has been fed by misinformation or distorted and misleading statistics spread via social media (Jain et al 2021). Around the world, conspiracy theorists and misinformation have contributed to vaccine refusal (Razai et al 2021) and threaten future vaccine acceptance (Burki 2020).

Yet throughout recent history vaccines have played a major role in reducing the occurrence of infectious diseases in the world. Morbidity and mortality from many contagious diseases has fallen markedly due to these efforts. In reality, to maintain the balance of individual and collective rights, from a global perspective it should be harder to get an exemption than to get a vaccine.

The question "Would you be willing to give up your individual rights for the sake of the common good?" will always be the subject of debate; however, in the face of the ongoing pandemic and the dual need to preserve lives and health and to maintain economic and social functioning, we need to forge ahead in a way that preserves our privacy and civil liberties as much as possible and ensures that there are safeguards in place. To sum it all up is a quote by 'Dr. Seuss' (T.S. Geisel) "So be sure when you step, step with care and great tact. And remember that life is a great balancing act" (Seuss 1990). Although this is a quote from a children's author, it applies in so many ways to the

approach that must be taken with Covid vaccination policies in regard to not only the acceptability by individuals and minimization of ill-founded hesitancy or rejection but especially in relation to the ethical issues involved in informed consent.

All individuals who are being administered a Covid vaccine — or their surrogate (e.g., parent, caregiver, nominated decision-maker for those of diminished responsibility) — must be informed of its benefits and risks for consent to be genuine and ‘informed’ (i.e., not obtained in the absence of information or by deception). A client/patient must be able to access knowledge about its composition prior to administration to clarify any concerns they may have. They must be informed of the possible side effects, their frequency and severity. In the absence of competence on the part of the client/patient, their surrogate must be competent to make such a decision and similarly informed and consent voluntary. Consent should include all the information needed for the client and entail the benefits of vaccination both in the short and long run as well as the negative effects that have a likelihood of occurring post-administration. Informed consent with regards to vaccination is controversial for many reasons (see, e.g., Zagaja et al. 2018) such as first, existing medical condition (earlier strokes, existing clotting irregularity); secondly, risk of medical side-effects (e.g., rare complications with different vaccines in relation to cytokine storms (Baldelli et al. 2021), thrombocytopenia, and myocarditis and very rare Guillain-Barre syndrome) (European Medicines Agency 2021); thirdly, religious concerns (e.g., use in vaccine research of cell lines derived from fetal cells deters some; despite vaccination arising from such research having been encouraged by Pope Francis in the absence of an alternative (Watkins 2021), a minority of Catholics continue to reject vaccination by any of the five vaccines derived from such research) (Giubilini et al 2021); and fourthly, ‘personal reasons’. This creates potential conflict with the public health sector and obligatory vaccines as it causes a divide with individuals who choose to not take the vaccine and limits the reach of vaccination campaigns for the country as a whole. This is a substantial issue between individuals rights and public safety as with informed consent this becomes apparent. Informed consent proposes a solution and informs clients about the requirements and enables people to feel at ease both before and after the administration of the vaccine (Zagaja et al. 2018). Informed consent has two main purposes which are to protect individuals and inform them of all the risks/benefits that will be provided as well as protecting the society (Zagaja et al. 2018).

But with consent, it is broadly considered there should be choice, that is, the ability to accept to or reject the proposed vaccination. While the vast majority in many developed countries are voluntarily accepting vaccination, having been convinced of its medical (and ethical) necessity, there remains hesitancy among some and refusal among a smaller minority. This is despite overwhelming evidence that, compared to those who have been vaccinated, they are more likely to contract Covid-19, suffer severe illness and a larger proportion of them die if they contract the disease. This poses a threat to their own health and that of others directly and indirectly (in both the shorter and longer term). The impact of otherwise avoidable pandemic morbidity and mortality reduces others’ access to diagnostics/surgery, increasing their disease burden and death rate (e.g., Lai et al 2020). It displaces others who require critical care (e.g., Yuguero et al. 2021), and threatens overall health care systems in both the high-income countries and in lower- and middle-income countries where the existing medical facilities are fewer and resources scarcer. The pandemic has also hampered routine childhood vaccinations worldwide with millions of children missing pertussis, measles and mumps vaccinations — related disease risk has increased markedly (WHO 2021).

This situation has pushed governments to adopt what their critics deride as needless authoritarian measures in relation to Covid vaccination (measures deemed ‘needless’ as such persons as generally they do not recognize the value of vaccination). Many individuals are being put under pressure to be vaccinated by advertising campaigns, the threat of exclusion from public events or venues, and if employed in areas such as the health sector where contact with vulnerable persons is inevitable, they may face relocation or even termination should they refuse vaccination and/or repeated testing. Health authorities and governments have broadly concluded that the ‘right’ of such persons to employment is tempered by the ‘right’ of other members of the public to continued life and health and the government’s obligation and ability to provide health care to its citizens.

Nevertheless, with their objections to vaccination, the vaccine hesitant and vaccine refusers are themselves exerting pressure on authorities by insisting that informed consent is vital prior to any vaccine administration. Through this,

the presence of ‘willingness’ is included in the procedure and its absence does not later become cause for concern. Although consent is vital, this creates a dynamic in the economy that could impede government immunization efforts. Obligatory (mandatory) vaccinations create a complication when accompanied by the requirement for consent, as some individuals develop a dissatisfaction with the vaccination process or their existing reluctance hardens into refusal, lowering the total health standards of the population (Zagaja et al. 2018). The ability to exercise individual decision-making and consent (freedom of choice, willingness to accede) can come at a price. Research remains ambivalent regarding cash payment for vaccination with a Swedish intervention showing a positive result but others arguing that such measures may be counter-productive (Campos-Mercade et al. 2021), undermining confidence in the value of the vaccine. Governments have largely adjured the ‘carrot’ and adopted the ‘stick’. As Zagaja et al. (2018) have stated, “Vaccination coercion exists at various levels... not accepting unvaccinated children to public schools or being denied various benefits.” This creates a conflict between consent, which include the benefits and the risks, and the inclusion of individuals in society. With the need for consent comes a struggle for individuals to debate whether they would integrate into the economy, and society more broadly, or be excluded in one way or another. Consent should be given without any threat of exclusion to be deemed “freely given” or an indication that a person truly favors the proposed course of action. In the United States, many states have a specific legislation governing informed consent, and in this way, patients have rights. Advocates believe that informed consent is an ethical and appropriate way for physicians and others to be obligated to inform clients (especially parents of children) about the benefits and risks of any vaccine as for any other medical treatment (College of Physicians of Philadelphia 2018). In this manner, patients and caregivers are also given the opportunity to ask any questions they feel the need to. In regards to vaccination, the vaccine information statement provides basic information about vaccine risks and benefits and is required to be supplied to a person so that person is able to make an informed decision before accepting the vaccine for themselves or a person for whom they have legal responsibility (whether young child or someone who is elderly or ill or not deemed *compos mentis*). Nevertheless, the same source is clear that a number of vaccines are mandatory in the United States and comments that tension remains where individuals do not wish to comply due to their desire to refuse vaccination for themselves or their children, whether because they “do not accept existing medical or safety evidence, or... their ideological beliefs do not support vaccination” (College of Physicians of Philadelphia 2018).

Informed Consent

Around the world, immunization programs are increasingly including in their national immunization schedules, vaccines that target age groups beyond infancy and early childhood. In the United States, a number of: US Supreme Court decisions established “both the constitutionally protected rights of parents and the inherent constitutional authority of the state to provide for public health and welfare” in that country (Olick, Yang & Shaw 2021). Under *Meyer v Nebraska* (1923) and *Pierce v Society of Sisters* (1925), parents have extensive, constitutionally protected rights to provide for their children’s welfare with substantial freedom from government interference” (Witte & Nichols 2011; also, Olick, Yang and Shaw 2018.). In regard to ‘children’s welfare’ and vaccinations, complex computations must be done by medical researchers and authorities to determine whether the balance of benefits from a vaccine or other treatment and potential detriment. Vaccinations for smallpox, for example, ceased when after decades of vaccination campaigns around the globe, the disease was essentially eradicated and the risk of vaccination side effects (rare contraction) outweighed the possibility of contracting it naturally and subsequently being ill or dying. It is this type of work that helps build trust in health advice and vaccination compliance. When detrimental effects outweigh benefits or a drawback is discovered, the development of a vaccine may be abandoned (e.g., an early Covid vaccine was abandoned when it resulted in positives in subsequent HIV testing: Senanayake et al 2020) or, if already in use, withdrawn from the market (Nigrovic & Thompson 2006). Even prior to the current pandemic, however, an apparently effective vaccine ceased production due to a combination of wide publicity for adverse events, subsequent court cases, the confusion of minor and major effects, and the falling sales that resulted from this coverage (a Lyme disease vaccine: Nigrovic & Thompson 2006). Parental decision-making comes increasingly into play as vaccine rollouts move on to assume first those 16–18 years of age, then 12 and over, and later 5–12, and lastly infants.

In regards to health care and legal protection for parental decision-making, or in our case, when it comes to the COVID-19 vaccine and parental/caregivers decision-making or consent, it is presumed that “parents invariably act in their children’s best interests and that both children and young teenagers lack autonomy to best decide for themselves” (Zermatten 2010). US legislation broadly protects parental rights in their children’s health care, but make exceptions “when parental decisions risk serious harm to the child”. With younger persons reported generally to experience only mild disease effects (frequently attributed to their healthy immune systems), some critics question the advisability of their immunization. However, research has shown that rare complications (including multi-system inflammatory syndrome which involves hospitalization and intensive care and has a death rate of 1%-2%) justify vaccinating teens while the aim of ‘herd immunity’ prompts vaccinating an even younger cohort, though researchers urge lower dose vaccination, longer follow up and closer monitoring due to the young age of participants (Zou & Bao 2021). Vaccination has become a cultural norm and expectation as a result of governments undertaking programs over decades to achieve national herd immunity for numerous childhood illnesses — and what has become routine parental agreement. In some countries, pockets of resistance have developed (such as in north-eastern NSW in Australia) that predated the pandemic. This has resulted in outbreaks of childhood illnesses almost extinguished elsewhere, while disadvantaged groups experiencing poverty and disengagement also require additional encouragement (e.g., outreach programs among the disadvantaged in NSW: Thomas et al. 2018; mobile prompts in Kenya: Gibson et al. 2017). In both developed and developing countries authorities have adopted additional vaccination encouragement (or non-vaccination discouragement (access to childcare or additional funding) to achieve the desired required higher vaccination rate (compare Peleg 2021).

COVID-19 vaccination apprehension and alarmism constitute substantial barriers to adequate coverage, placing both adolescents and communities at risk. In the US, however, there are specific means to exploit when parents refuse vaccination for those older children. “There are explicit laws to permit teenage agreement to vaccination when parental permission is lacking, following the lead of the District of Columbia” (Haelle 2021). Policymakers should also look into how current laws may be used to allow teenage consent to COVID-19 vaccination. Some legal scholars counsel that minor consent laws are best construed narrowly and that independent consent requires express or strongly supported legal basis (Coleman et al). Therefore, adolescent consent to COVID-19 vaccination requires specific legislation. There are many other scholars who “contend that minor consent laws can sometimes be construed, such as through regulation, to reflect ethical norms in support of adolescent autonomy” (McCauley et al). In the end it all depends on what the person’s perspective is on the matter and the legislation or regulation in the particular jurisdiction. When making any type of important life decision, consent is so important. When it comes to age, who can give consent is also so important. “For consent to be valid, it must be informed, understood and voluntary, and the person consenting must have the capacity to make the decision” (WHO 2016). Since the almost global acceptance of the United Nations International Convention on the Rights of the Child, adulthood is generally regarded as anyone 18 years or over. This would mean as long as a person is over 18 and able to make decisions for themselves, consent is in their own hands on most jurisdictions. For children or those under the age of 18, a parent or legal guardian would be in charge of giving consent. This normally works fairly well. Parents are generally do want the best outcomes for their children. It must be acknowledged, however, that some parents will prioritize their ideology or beliefs over what most would consider the health of their child (e.g., blood product refusal for their children by Jehovah’s Witnesses even in life threatening situations) although a ‘mature minor’ may be accorded the right to accede to such treatment. A child in their later teen years may have opposing views to their parents and their ability to be involved in decision-making in relation to medical procedures is recognized in several jurisdictions in the United States, Australia and elsewhere (e.g., European Union member states). The participation of mature minors in decision-making regarding their medical treatment, and indeed in vaccination acceptance, is recognized by the World Health Organization: “Assent refers to the process of children’s and adolescents’ participation in the decision-making on vaccination” (WHO 2016). In the United States, 16 states have given teenagers, roughly above the age of 16, the ability to make their own health care decisions. At this point in their lives, they are able to make decisions on their own based on their own belief system. In the United States, an organization called VaxTeen helps teenagers and young adults who missed out on childhood and other

vaccines because of their parent's views (VaxTeen.com). Fueled by fear and misinformation, vaccine refusal among US adults and their unwillingness — even if vaccinated themselves — to subject their children to vaccination has risen markedly in the years preceding the pandemic but is now at an all-time-high. VaxTeen works to encourage vaccination among such adolescents and assist end the stigma of unvaccinated teenagers. Those who are able to make a decision while being well informed should be able to do so.

Concluding Remarks

Throughout history, vaccines have played a major role in reducing the occurrence of infectious diseases in the world. In reality to maintain the balance, from a global perspective, it should be harder to get an exemption than to get a vaccine. In the world of medicine, ethical questions and dilemmas continue to exist, particularly when it comes to vaccination. Government actions in administering vaccination should be guided by the goal of the greater good for society as a whole, and what is in the best interest of those receiving the vaccination. In the case of COVID-19, imposing vaccination on some specific groups of individuals (e.g., minors, those with philosophical or purportedly religious objections) presents a number of serious difficulties. As COVID continues to develop, it becomes apparent that the need to foster consent to the vaccine and the consent process itself prior to vaccination are significant. People need to be aware of the benefits of any vaccine, its components, and potential side effects (and their incidence rate), and the balance of benefits and risks to themselves, their families and communities, their country and global health. It is an immense task that must be addressed as epidemiologists and virologists warn that it is not a question of 'if' but 'when' a major and even deadlier pandemic may arise. 'Next time' we ought to be better prepared. A well-informed population (rather than a misinformation driven one) that feels once again able to trust health authorities and their advice is among the keys to securing a timely effective response that involves vaccination among other measures.

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Retailing and Consumption Behaviour in an era of Covid-19: Possibility of recovery

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ABSTRACT

Purpose of the study: the purpose of this article is to provide an initial impact assessment of Covid-19 on the South African retail sector.

Design/methodology/approach: The study follows descriptive research design. It employs quantitative analysis of data obtained from Statistics South Africa (Stats SA) over 16-month period (01.2020-04.2021).

Findings: The study found that the impact was uneven across all retail categories. Of the seven categories that showed significant contraction were retailers that fall in the category of textiles, clothing, footwear and leather goods, retailers in household furniture, appliances and equipment, retailers in hardware, paint and glass, and all other retailers that did not fall in the other categories. Retailers that were least affected included retail categories that fall in the category of pharmaceutical and medical goods, cosmetics and toiletries followed by general dealers, and retailers of food, beverages and tobacco in specialised stores.

Recommendations/value: Retailers response should be equal to the changing consumer demand and choices. More and more consumers are changing their shopping and consumption behaviour, and are willing for home-deliveries, store pick-up, and cashless transactions.

Managerial implications: There is no doubt the Covid-19 pandemic is accelerating the adoption of online retailing, and those who will succeed will be the ones that embrace it. Pivoting on existing products and business processes should be seen as a norm in surviving and excelling going forward.

Keywords: Retailing, consumption behaviour, Covid-19, recovery

Issues and psychosocial factors towards collaborative consumption in Morocco: case of planned carpooling.

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Abstract :

Considered as a new business model, collaborative consumption is no longer a simple marketing trend. Its development is essentially based on the creation of value in a world where resources are limited.

The concept of carpooling, which is part of the practices that have revolutionized the world of collaboration, is shaking up consumer behavior through a new form of collaborative mobility. It has brought to light parameters that favor the growth of this practice, but also others that may limit its growth.

In Morocco, the specific context of the transport sector is marked by informal practices; the most widespread being that of "khettafas". While there is still an inadequacy of transport-related offers and an anarchy in this sector, the profile of the "young Moroccan collaborative consumer" who indulges in carpooling is disrupting the diktats imposed by the official transport system.

Our article aims to analyze the different issues related to the practice of carpooling in Morocco, and to study in parallel the psychosocial factors explaining the degree of appropriation and acceptance of this practice. To do this, we used a quantitative study with a diverse population, aiming to explain the impact of psychosocial factors on the attitude, appropriation and acceptance of carpooling in Morocco. Our objective is twofold: on the one hand, we sought to identify the various obstacles and advantages of such a practice in Morocco, and on the other hand to determine the brakes and motivations towards the practice of carpooling by the Moroccan consumer.

Key words : Collaborative consumption, carpooling, psychosocial factors, quantitative study, acceptance, motivations and brakes.

Determinants of youth Entrepreneurship in Malawi

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Abstract

Entrepreneurship is regarded as one of the remedies to solve unemployment rates for both the youth and the general population in most countries especially developing countries like Malawi. The importance of encouraging youth entrepreneurship should be given high priority as it is reflected as goal number 8.3 under the Sustainable Development Goals. Regardless of so many efforts poured towards this skill there exists so many negative factors hindering the growth of the subject. Malawi is not immune from these challenges faced in terms of enriching entrepreneurial skills to especially the younger generation. From literature, it shows the subject of entrepreneurship has not been much researched hence there exists a lot of gaps in this area. As such this could be one of the contributing factors to the disparities that exist in development of youth entrepreneurship in Malawi. Many theories have so far justified the gaps, but no country-based quantitative research has backed up the theories. Using the fifth Integrated Household Survey from National Statistics Malawi 2020, the study analysed the determinant drivers of youth entrepreneurship in Malawi. To achieve this the study employed descriptive statistics and a Probit model to empirically determine the drivers of youth entrepreneurship in Malawi. The descriptive results show that in general the youth were less likely to take part in entrepreneurship skills, addressing the issue by gender, females were less likely to own a business enterprise as compared to the male counterpart. Further to this male were more likely to access credit as compared to female counterparts. The result from the Probit model revealed that married people, educated people, Households from Northern part of the country, those with access to credit were amongst the variables with more chances in taking part in entrepreneurship. Policy recommendations from the study suggest the strengthening of income-generating activities, increase access to loans to everyone in need regardless of their gender dynamics, provide entrepreneurship trainings to those in need especially the youth as well as intensification of education at all levels to positively induce the growth of youth entrepreneurship in Malawi.

Key Drivers for Infrastructure Public-Private Partnership Adoption in Sweden

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Abstract: This paper explores key drivers and their underlying rationales for infrastructure Public-Private Partnership (PPP) adoption in Sweden. A related aim is to compare the identified key drivers for Sweden in relation to what is known for other countries. Data was collected via semi-structured interviews with 16 Swedish private sector and public sector stakeholder PPP experts. The results reveal risk transfer to the private sector, reduction of total project costs, and increase in investment alternatives as particularly important key drivers in the case of Sweden. In a country comparison of key drivers Sweden was not found to mirror any specific country or group of countries, calling for deeper analysis. Moreover a few underlying rationales put forth for key drivers were in addition to those reported in the literature. This study contributes to the literature by identifying conducive factors for PPP adoption given sparse and infrequent past country use. Hence, the findings should be considered for Sweden and countries similar to it.

Keywords: Public Private Partnership, PPP, drivers, motivations, conducive factors, adoption, infrastructure.

Introduction

A public-private partnership (PPP) refers to “a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility and remuneration is linked to performance” (World Bank Institute, 2017). In comparison, traditional public procurement (TPP) typically restricts private parties’ involvement to construction of the infrastructure (Burger and Hawkesworth, 2011). A key distinction between PPP and TPP is thus that PPP implies more risk transfer to the private sector following responsibility of both constructing and operating infrastructure over a long period of time. The economic efficiency gains of procuring infrastructure using PPP versus TPP has been an issue of continued debate amongst scholars and practitioners during the past two decades (c.f. Li et al, 2005; Liebe and Pollock, 2009; Burger and Hawkesworth, 2011; Liu and Wilkinson, 2011; Chou and Pramudawardhani, 2015; Schepper et al, 2015; Osei-Kyei and Chan, 2017; Carbonara and Pellegrini, 2018; Cui et al, 2018). In the present paper we contribute to this stream of research by exploring key drivers for PPP infrastructure provision in Sweden. Key drivers thus represent main motivations for PPP adoption (Chou and Pramudawardhani, 2015).

Three main rationales underly the conduction of the present study. First, PPP is of practical importance. It is increasingly used to address financial, legal, political and social challenges of public infrastructure procurement (Roehrich et al, 2014). Between the years 1990 and 2017 more than 1800 PPP contracts were signed in the EU, representing a capital value of about EUR350 billion (EPEC, 2018). At the same time its viability to the public sector is continuously debated (Loosemore and Cheung, 2015). Second, from a literature viewpoint studies of key drivers for PPP adoption in countries with infrequent and sparse PPP use are needed. This way additional key drivers may be identified and differences in magnitudes of key drivers for countries with frequent versus infrequent use may become better understood. The present study thus contributes to the literature by exploring key drivers for a country with infrequent and sparse prior use. Until now identified drivers including e.g. accessing private finance (Bayliss and Van Waeyenberge, 2018), transferring risk to the private sector (Osei-Kyei et al, 2014), and accelerating project delivery (Li et al, 2005) are mainly the outcome of studies of countries with frequent PPP use. This includes China, UK and Australia (Osei-Kyei and Chan, 2015). Why key drivers are of different importance across countries have been paid sparse attention to in the literature (Liu and Wilkinson, 2011; Osei-Kyei and Chan, 2017). In the present study we therefore explore underlying rationales for key drivers in the case of Sweden. Hence, underlying rationales may yield deeper understanding of why key drivers differ in their magnitude to different countries. Third, Sweden represents an interesting country case. It displays institutional characteristics associated with frequent PPP use. This includes a well-functioning financial market, a developed and functioning legal system, and high-quality contractors and sub-contractors (Wibovo and Alfen, 2014; Panayides et al 2015; Verhoest et al, 2015). Nevertheless, its use is infrequent. The same can be observed for e.g. Austria, Denmark, and Finland, i.e. Sweden is not unique in this respect (Verhoest et al, 2015). Moreover, the nature of PPP projects undertaken in Sweden until now are diverse: a bridge to Denmark in the 1990’s, a rail track between an airport and a city central station around the millennium, and a recent hospital construction. This suggests it is not unwillingness to adopt PPP for procuring certain types of infrastructure that explains Sweden’s infrequent use. Furthermore, use of PPP is currently considered in Sweden. In a recent public inquiry report (SOU 2017:13) a PPP infrastructure trial programme is proposed. Specifically, this implies three PPP trial projects in the transport sector. The major argument for the trial programme is that Sweden, similar to many other countries, faces an infrastructure deficit making it worthy to consider alternative models for infrastructure provision.

The main aim of the present study is to explore key drivers and their underlying rationales for infrastructure PPP adoption in Sweden. A related aim is to compare the identified key drivers for Sweden in relation to what is known for other countries. To achieve the objectives of the study we conduct semi-structured interviews with private sector and public sector PPP stakeholders in Sweden. The remainder of this paper is organized as follows. First, the literature on key drivers for PPP adoption is reviewed. Second, methodology choices are explained including conduction of semi-structured interviews. Third, the empirical findings are presented and discussed in the light of the literature reviewed. Fourth and finally, conclusions are drawn including limitations, directions for further research and practical implications.

Literature Review

Key drivers for PPP adoption

Different key drivers for adopting PPP over traditional public procurement (TPP) are put forth in the literature. One is access to private funds. For countries with restrained budgets it can be the remaining option for important infrastructure investments to be made (Chou et al, 2012; Almarri, 2018). Furthermore, it is argued that by financing infrastructure with private funds, public funds are freed up and can be redirected to support sectors of higher priority thereby reducing public money tied up in capital investment (Osei-Kyei and Chan, 2014). This follows from periodic

service payments replacing public sector capital expenditures (Chan et al, 2009). Periodic service payments are moreover argued to generate cost certainty to the public sector. This is due to private sector contractual responsibilities and profit incentives during the project lifecycle (Osei-Kyei, et al, 2014). Another motivation for PPP adoption is that project risks become more efficiently allocated and managed. The argument is that the private sector is more efficient in asset procurement and service delivery due to its profit incentives (Hwang et al, 2013). For instance, construction risks, and design risks are preferably allocated to the private sector, while environmental approval risks, and land acquisition risks are preferably allocated to the public sector (Li et al, 2005; Jefferies and McGeorge 2009).

The private sector's higher innovative capabilities have been put forth as a driver for PPP adoption. The argument made is that the private sector to a higher extent than the public sector is continuously searching for new products and services in order to improve its competitive edge (Ismail, 2014). This is supposed to benefit the public sector by obtaining better asset quality and service levels. A related reason for the public sector to partner with the private sector is to get access to the knowledge and technology of the private sector, thereby improving public sector resource capital and capabilities (Ghobadian et al, 2004; Chan et al, 2006). Better maintenance of infrastructure has been suggested as a motivation for using PPP. The argument is that when the maintenance and operation is borne by the private party, it is motivated to ensure better design and construction of the infrastructure such that project life-cycle cost is minimized (Osei-Kyei, et al, 2014; Debela, 2019). Thereby PPP use can contribute to reduced project cost relative to other procurement forms. Quicker project delivery is stated as another rationale for PPP use. This is due to the private party recouping its revenue earlier if it delivers the infrastructure before schedule (Cheung et al, 2010).

Infrastructure projects are typically large and require adopting expertise from many areas (Chan et al, 2009). PPP is therefore argued as a model that encourages cooperation between collaborating parties. This has been suggested to lead to integrated solutions for public infrastructure, and to spur local economic development (Chou and Pramudawardhani, 2015). The latter thus represents yet another driver for PPP use. Li (2003) identified 15 key drivers for PPP adoption which subsequently have been adopted in studies across country contexts (e.g. Chou et al., 2012; Chou and Pramudawardhani, 2015; Debela, 2019). Table 1 below summarizes the observations of these key drivers by country and source.

Table 1 Identified Key drivers for PPP adoption by country and source

Key Driver	Country (Source)
Solving the problem of public sector budget constraint	China, Hong-Kong (Chan et al, 2009; Yuan et al, 2010; Osei-Kyei and Chan, 2018); Ethiopia (Debela, 2019); Ghana (Osei-Kyei et al 2014; Osei-Kyei and Chan, 2018); Malaysia (Ismail, 2014); Taiwan (Chou et al, 2012); UK (Li, 2003; Li et al, 2005); UAE (Almarri, 2018)
Providing an integrated solution for Public infrastructure	Australia (Cheung et al, 2010); Indonesia (Chou and Pramudawardhani, 2015); Malaysia (Ismail, 2014)
Reducing public money tied up in capital investment	Ghana (Osei-Kyei et al, 2014)
Capping the final service cost	UK (Li et al 2005)
Facilitating innovative approaches	Australia (Cheung et al, 2010); Ethiopia (Debela, 2019); Indonesia (Chou and Pramudawardhani, 2015); Malaysia (Ismail, 2014); Singapore (Hwang et al., 2013)
Reducing the total project cost	Australia (Raisbeck et al, 2010); China, Hong Kong (Chan et al, 2009; Yuan et al, 2010)
Accelerating project delivery	Australia (Raisbeck et al, 2010); China (Osei-Kyei and Chan, 2018); Ghana (Osei-Kyei and Chan, 2018); New Zealand (Liu and Wilkinson, 2011); Taiwan (Chou et al, 2012);
Transferring risk to the private sector	China (Osei-Kyei and Chan, 2018); Ethiopia (Debela, 2019); Ghana (Osei-Kyei et al, 2014; Osei-Kyei and Chan, 2018); New Zealand (Liu and Wilkinson, 2011); Singapore (Hwang et al., 2013); UAE (Almarri, 2018); UK (Li, 2003; Li et al, 2005; Nisar, 2007; Almarri, 2018)
Reducing public sector administration costs	Ghana (Osei-Kyei et al, 2009)
Benefitting local economic development	Indonesia (Chou and Pramudawardhani, 2015); New Zealand (Liu and Wilkinson, 2011)
Improving buildability	Ethiopia (Debela, 2019)
Improving maintainability	Indonesia (Chou and Pramudawardhani, 2015); Ethiopia (Debela, 2019)
Transferring technology to local enterprise	UAE (Almarri, 2018)
Providing nonrecourse or limited recourse public financing	Taiwan (Chou et al, 2012)

Accelerating project development

Australia (Cheung et al, 2010); Ethiopia (Debela, 2019); Indonesia (Chou and Pramudawardhani, 2015); Taiwan (Chou et al, 2012)

Methodology

Semi-structured interviews and interview guide

This aim of this qualitative research was to explore key drivers for PPP adoption in Sweden, including the underlying rationales for such drivers. To fulfill the aim, we conducted semi-structured interviews with experienced private and public sector PPP experts. Interviews were chosen as data collection technique to obtain an in-depth understanding of the research topic (Kvale and Brinkmann, 2009) and to allow for probing on details related to the underlying rationales for key drivers in the Swedish context. Probing thus represents a relative advantage of using interviews over e.g. surveys as data collection technique (Hutchinson and Skodol-Wilson, 1992). This type of data collection technique has for such reasons been adopted in similar PPP studies as well (C.f. Liu and Wilkinson, 2011; Osei-Kyei and Chan, 2017).

An interview guide was developed based on the literature on key drivers for PPP adoption, and the recent proposal of a PPP trial programme in Sweden (SOU2017:13). The same thematic questions on use of PPP in Sweden were asked in all interviews. Questions were though adapted based on interviewees' role and expertise related to PPP infrastructure provision, e.g setting-up procurement, financing, constructing or operating infrastructure. The main thematic questions were as follows:

- (1) What are main motives for adopting the PPP approach over the traditional bid-build (TPP) method in Sweden?
- (2) What are the reasons for these motives in the Swedish context and are some of the motives more important than others?
- (3) Do you think Sweden differs from other countries in the motives for PPP adoption, and if so why?

Sampling of interviewees

Due to that interviews required well-experienced and knowledgeable experts a purposive sampling technique using pre-defined criteria was used. Hence, Sweden is characterized by sparse and infrequent prior PPP use why many stakeholders may not be sufficiently knowledgeable about PPP. To circumvent the latter, we adopted the three selection criteria used by Cheung et al (2010) and Osei-Kyei and Chan (2017). A fourth criterion was added to ensure that a broad representation of stakeholder perspectives on PPP in Sweden was captured. The four criteria were:

- The interviewees should have in-depth knowledge on the general practice of PPP and must have followed very closely the use or consideration of PPP adoption in Sweden.
- The interviewee should have adequate hands-on experience of PPP in Sweden or a country which resembles Sweden in terms of well-functioning financial market, developed and functioning legal system, and high-quality contractors and sub-contractors. That is, conditions reported supportive of PPP use by a country (Wibovo and Alfen, 2014; Panayides et al 2015; Verhoest et al, 2015)
- Interviewees should hold a senior position in his or her private or public organization to ensure capturing holistic stakeholder organization PPP views, e.g. setting-up procurement, financing, constructing, or operating infrastructure.
- To ensure that different perspectives and stakeholder views are captured, each interviewee should belong to a unique private or public sector organization.

The criteria put up implied a trade-off between quality of data (relevance and depth) and sample size. Specifically, as Sweden is characterized by sparse and infrequent PPP use, there is a limited number of respondents with in-depth relevant expertise. In total 16 interviews were therefore conducted with equal representation from private and public sector stakeholder organizations. The relatively low sample size is not uncommon for qualitative researches into PPP adoption. The sample size in the present study is in fact larger than that used in quite a few similar studies (c.f. Dixon et al, 2005; Liu and Wilkinson, 2011; Osei-Kyei and Chan, 2017).

Interview process

Potential interviewees were approached via e-mail with information about the purpose and conduction of the interview, including the thematic questions. Interviewees meeting the selection criteria were identified in two ways. First, via publicly available documents online explicating their expertise. Second, via recommendation from those we had already interviewed. Each interview thus ended with asking the interviewee to recommend whom to interview next given the selection criteria. This allowed us to focus on key stakeholders and advance data collection, consistent with Opara et al (2017). All but one of the 17 identified experts agreed to be interviewed. The 16 interviews were conducted between 15th of November 2017 and 25th of May 2018. The average interview took 1.5 hours, and all interviews were audio recorded. Eleven of the interviews were conducted face-to-face, while five interviews were conducted over skype with video and audio. Skype was used in case of availability limitations, and all interviewed via Skype were experienced users of this software. Interviewees representation spanned government officials, contractors, consultants to the private and public sector, bank representatives, and, investment and pension company senior staff. The interview process followed the techniques recommended by Leech (2002). This allowed us to combine pre-determined open questions with the opportunity to explore themes or responses further. This procedure was chosen to provide as much depth as possible on specific topics while staying within the topics of interest (Oppenheim, 1992).

Data analysis

All interviews were transcribed by one of the authors and checked for accuracy by the other author. This procedure was enabled by both authors participating in all the interviews. Thereafter qualitative content analysis was performed. This was done by classifying data into fewer categories (Patton, 2002). In the present study key drivers represented categories and were first explored in a pattern matching fashion. Specifically, that is whether the observed key drivers resemble any of the 15 key drivers for PPP adoption identified by Li (2003). Li's list of key drivers has been extensively used in subsequent research, hence its use here as theoretical pattern. Whenever a key driver observed was not possible to match with Li's list, a data driven approach of content analysis was adopted for its specification (Schreier, 2012). We used subsumption as a coding frame for identifying underlying rationales put forth by interviewees for key drivers stated (Schreier, 2012). This was done in a data-driven fashion whereby rationales were coded as separate until they no longer represented unique rationales, in which case they were collapsed into an existing code (rationale). The coding and collapsing were repeatedly checked by both authors to ensure accuracy of the content analysis.

Results

Interviewee profiles

Table 2 below details the profile of the 16 interviewees. Each interviewee holds a senior position in his or her organization and represent a unique private or public sector organization. The PPP expertise of interviewees as a collective span how to procure, finance, build, operate, and manage PPP projects.

The code explicated in Table 2 will be used in the remainder of this study to denote a respondent. Specifically, PR denotes a private sector respondent and PU a public sector respondent. This anonymity procedure was used to enable interviewees to share information of sensitive character during interviews. PR1, PU2; PU5, and PU8 were the ones interviewed over Skype.

Table 2 Interviewee characteristics

Code	Representing	Respondent infrastructure PPP expertise
PR1	Pension company	Financing of +10 projects in Northern Europe, including Sweden
PR2	Pension company	Operating phase investments, Northern Europe including Sweden
PR3	Banking	Financing of +10 projects in Northern Europe, including Sweden
PR4	Consulting	Procurement advisor to public sector on large Swedish project
PR5	Construction	Bidding on and delivering +40 projects globally including Sweden
PR6	Banking	Bidding on and financing + 5 PPP projects in Northern Europe
PR7	Construction	Public sector advisor, investment analysis + 10 European projects
PR8	Investment company	Fund raising and investment in Nordic countries including Sweden
PU1	Banking	Policy and Management guidelines in +20 projects across Europe
PU2	Banking	Financing of +10 European projects including Nordic countries
PU3	Ministry	Project governance and value for money assessment in Sweden
PU4	Pension company	Operating phase investments in Europe including Sweden
PU5	Former ministry	Public finance including value for money analysis in Sweden
PU6	Government Agency	Cost-benefit analysis of transport infrastructure project in Sweden
PU7	Government Agency	Responsibility for proposal of PPP trial programme in Sweden
PU8	Government Agency	Public procurement including infrastructure PPP in Sweden

Key drivers and their underlying rationales for PPP adoption in Sweden

In this section we present the identified key drivers and their underlying rationales as derived from interviews based on the content analysis. Table 3 below provides a summary of the findings. We use quotations below to emphasize contrasting views expressed by interviewees on key drivers and their underlying rationales. In total seven different key drivers for PPP adoption in Sweden were identified. Those were reduction of total project cost, reduction of money tied up in capital investment, transfer of risk to private sector, increase in public sector intellectual capital, facilitation of innovation, increase in investment alternatives, and fiercer project competition.

Reduction of total project cost was seen as a key driver both by some private sector and public sector respondents. PR4 and PR5 put forth the underlying rationale that the private sector is more knowledgeable than the public sector in reducing project life-cycle cost. PR6 and PR8 argue that the private sector due to its profit incentive has stronger motive to accelerate project delivery and thereby lower total project cost. They mean that such incentives are typically absent if the public sector runs a project. In addition, PU2 and PU8 argue that PPP makes sense to adopt for types of projects where the public sector has a track record of running over budget in development of infrastructure. Reduction of total project cost as a key driver was though questioned by other interviewees. One respondent stated:

“We do not build more nor faster using private funds” (PR4)

In line with this statement respondents from the banking industry question whether life-cycle costs will be reduced by involving private parties in infrastructure investments (PR3 and PR6). They reason that financing infrastructure investments with private funds is more expensive than financing it with public funds. A respondent from the construction industry also agree that more infrastructure is not built by using private funds (PR7). However, this respondent argues that PPP can contribute to reduced cost overruns and thereby also to reduced total project cost.

Reduction of public money tied up in capital investment is a key driver for PPP adoption according to one private sector respondent (PR5). This respondent means that private financing does not negatively impact the public sector's maneuvering space since no grant financing is needed if a PPP is financed privately. Two respondents' express skepticism to reduction in public money tied up in capital investment being a key driver for PPP adoption in Sweden. According to one of them:

“You only transfer investments over time” (PU4)

This statement refers to that using private funds implies yearly operational expenditures for the government instead of an upfront capital expenditure. Such operational expenditures reduce the government's opportunities to invest over time (PU1, PU4). On the other hand, a respondent from the banking industry is of the view that if an incremental investment does not fit within the government's yearly budget but is of social value and contributes to economic growth why not undertake it using private funds (PR3).

Transfer of risk to the private sector is the most frequently pointed out key driver for adoption of PPP by interview respondents. PR3, PR4, PR6 and PU1 mean that it is particularly risks during the construction phase of a PPP project that is preferably transferred to the private sector. Hence, high-quality private contractors and subcontractors more efficiently manages such risks compared with the public sector. Partly that is due to private parties' expertise and experience in handling such risks on a daily basis, and partly due to their profit incentive. In particular and according to them, this rationale applies if contractors also have a responsibility for the infrastructure during the operating phase, as is typically the case with PPPs in contrast to TPPs.

Some stakeholders point out *increase in public sector intellectual capital* as a key driver for PPP adoption in Sweden. According to them Sweden has high-quality contractors, and subcontractors (PU1, PU2). By collaborating with these actors, the public sector's competence level for scrutinizing and completing projects will increase (PU6, PR7). At the same time voices are raised against this key driver:

“With private profit incentives and the government as counterpart things can go very wrong” (PU3)

This reflects that the private party's main objective is to profit, while the government's main concern is social welfare. Another respondent raises a similar concern stating that the private party does everything to profit from the contract with the public sector, even at the expense of social value generation (PR4).

Facilitation of innovation is a key driver for adopting PPP according to one respondent (PR5). This respondent means that the private sector to a higher extent than the public sector is forced to innovate in order to stay competitive. In turn such innovations spill over on quality of products and services delivered to society. This is due to the longer-term nature of PPP projects vis-à-vis the more traditional bid-build method according to this respondent.

Increase in investment alternatives is yet another key driver identified. This driver was pointed out by pension companies in particular (PR1, PR2, PU4). This reflects these actors demand for investments characterized by long-term stable cash-flow with non-cyclical risk characteristics. They mean that this benefits society indirectly by in the long run contributing to better pensions for citizens. A second underlying rationale is put forth for this key driver by PU5 and PU6. They argue that if an incremental investment alternative does not fit within the government's yearly budget but is of social value and contributes to economic growth why not undertake it now using private funds.

Finally, *fiercer project competition* is identified as a key driver for adopting PPP by one respondent (PR5). The underlying rationale is that for legal reasons it enables more competition for bids from international private actors than if other procurement methods are used.

Table 3 Key drivers and their underlying rationales for infrastructure PPP adoption in Sweden as stated by Interviewees

Key driver	Underlying rationales	Interviewee code
Reduction of total project cost	Better project life-cycle focus; stronger incentives for accelerated project delivery; Lower repurchase cost for government in case of default.	PR4, PR5, PR6, PR7, PR8, PU2, PU7
Reduction of public money tied up in capital investment	Eurostat criteria; no grant financing nor loans from The Swedish National Debt Office needed if financed privately.	PR5
Transfer of risk to private sector	Private party responsible for delays, and unforeseen maintenance costs; private sector manages certain risks more efficiently.	PR3, PR4, PR6, PR7, PR8, PU1, PU3, PU6, PU8
Increase in public sector intellectual capital	Access to private sector technology and knowledge due to cooperation.	PU6, PR7
Facilitation of innovation	less focus on lowest price, and more focus on delivering high value services and products.	PR5
Increase in investment alternatives	characteristics of infrastructure investments attractive to insurance companies, pension funds, and financial institutions; Incremental investment alternatives.	PR1, PR2, PU4, PU5, PU6
Fiercer project competition	The procurement form implies lower demands for international actors to participate leading to higher competition for bids	PR5

Discussion

We identified seven key drivers for infrastructure PPP adoption in Sweden, a country with infrequent and sparse PPP use. Risk transfer to private sector, reduction of total project cost, and increase in investment alternatives seem to be particularly important such drivers to this country. Hence, these key drivers were reported both by several public sector and private sector interviewees. Risk transfer to the private sector has been frequently reported as a key driver for PPP adoption in the literature (c.f. Li et al, 2005; Liu and Wilkinson, 2011; Osei-Kyei and Chan, 2018). This suggests its general importance across contexts such as degree of previous PPP experience by a country. Reduction of total project cost has similarly been previously identified as a key driver (Chan et al, 2009; Raisbeck et al, 2010; Yuan et al, 2010). In the case of Sweden, it is particularly when it comes to reducing project life-cycle cost that the private sector is pointed out to be at an advantage vis-à-vis the public sector. Whether such possible lack of resource capital in the public sector is specific to Sweden or if it applies to other countries as well needs to be further explored. Concerning increase in investment alternatives as a key driver, the underlying pension improvement rationale has to our knowledge not been acknowledged previously in the literature. Specifically, fund managers in the case of Sweden argue that investment alternatives with long-term cash-flows that have non-cyclical risk characteristics contribute to such social value improvement in the longer term. To what extent this underlying pension rationale applies, and under what conditions needs to be investigated in more detail in future work. The other underlying rationale put forth by interviewees for this key driver was that incremental investment alternatives appear to the public sector. Specifically, investments of social value that do not fit within the yearly budget can be undertaken now rather than later. This line of reasoning resembles literature arguments for solving the problem of public sector budget constraint as key driver (Li et al, 2005; Osei-Kyei and Chan, 2018). However, it yet slightly differs from such arguments made. Specifically,

the interviewees in our study emphasized that PPP as procurement method offers investment alternatives to be considered by the public sector outside the budget rather than the making of such investments outside the budget per se. Hence, its treatment as underlying rationale for increase in investment alternatives as key driver.

Three key drivers identified for Sweden represent the views of one single interviewee within construction and therefore need to be interpreted with caution. In particular that is reduction of public money tied up in capital investment, which is argued against by some other respondents who mean that you only transfer investments over time. Facilitation of innovation has though been reported a key driver in previous studies (Cheung et al, 2010; Hwang et al, 2013; Chou and Pramudawardhani, 2015). Whether fiercer project competition is a key driver for PPP adoption in Sweden and perhaps also other countries is worthy further scrutiny. Hence, the respondent within construction argue that using PPP as procurement method increases international stakeholders' opportunity to bid for Swedish infrastructure projects.

With a few exceptions the underlying rationales provided by interviewees for identified key drivers corroborate the literature. For instance, increase in public sector intellectual capital as a key driver due to better access to private sector technology and knowledge has been previously acknowledged (Chan et al, 2009; Liu and Wilkinson, 2011). Similarly, more efficient allocation of risks to private and public sectors (Li et al, 2005), and how profit incentives make accelerated project delivery more likely (Osei-Kyei and Chan, 2018) are other underlying rationales for PPP adoption previously pointed out. Hence, with the exception of the pension argument, underlying rationales for key drivers do not seem to be different for Sweden despite of its sparse and infrequent PPP use.

Comparing our set of key drivers identified for Sweden with those identified for other countries (using the literature summarized in Table 2) a somewhat scattered picture emerges. Risk transfer as a key driver has been identified for various countries ranging from Ethiopia to UK, suggesting its generic importance across country contexts. At the same time increase in public sector intellectual capital has been reported a key driver for China and New Zealand, whereas facilitation of innovation is reported a key driver for Australia, Indonesia, Malaysia, and Singapore. This indicates that Sweden does not seem to mirror a specific country when it comes to key drivers for PPP adoption. Moreover, some key drivers identified for quite a few other countries are not identified in the case of Sweden. This includes benefitting local economic development and providing an integrated solution for public infrastructure which has been reported imperative for countries such as Australia, Indonesia and New Zealand. The scattered pattern of key drivers seen in a country comparison calls for deeper analysis. For instance, that is into how industry characteristics and institutional factors matter for key drivers' importance to countries. Hence, countries may differ on different dimensions of such characteristics and factors which may offer explanation to key drivers varying importance observed.

Conclusions

In this paper we have explored key drivers and their underlying rationales for PPP infrastructure adoption in Sweden. The study contributes to the literature on such key drivers by analysing a country characterized by sparse and infrequent PPP use despite displaying industry and institutional characteristics reported to be associated with frequent such use. Based on 16 semi-structured interviews with experts on infrastructure PPP provision we identified 7 key drivers for Sweden. Risk transfer to private sector, reduction of total project cost, and increase in investment alternatives are suggested to be particularly important in the case of Sweden. Hence, these factors were identified as key drivers both by several public sector and private sector interviewees. These findings should be seen in the light of Sweden's specific institutional, and economic conditions, including a strict fiscal policy approach.

The majority of previous studies on key drivers for PPP adoption have contributed by comparing the relative importance of such factors for countries using explanatory approaches and survey methodology. Fewer studies have adopted interview methodology to explore key drivers and their underlying rationales for countries (e.g. Liu and Wilkinson, 2011; Osei-Kyei and Chan, 2018). The present study has contributed to the latter stream of research by exploring a country with infrequent and sparse prior use. Overall, interviewees underlying rationales put forth for key drivers in Sweden corroborate the literature. Hence, differences in underlying rationales for key drivers is therefore not suggested to explain Sweden's hitherto infrequent and sparse PPP use.

Finally, we have contributed to the literature by comparing key drivers identified for Sweden with those previously identified for other countries. The comparison overall revealed Sweden not to mirror any specific country or set of countries. Rather, a scattered pattern emerged calling for deeper analysis.

Limitations and implications

The limitations of the present study need to be considered. First, the sample size of interviewees is low. This follows from Sweden's infrequent and sparse PPP use making the population of experts to approach small. Future work could attempt to overcome this by approaching experts in multiple countries characterized by infrequent and sparse previous PPP use. Second, the present study has considered adoption of PPP for infrastructure overall. How plausible PPP is to adopt for specific types of infrastructure, e.g. transportation, healthcare, and energy needs to be analysed and compared in future work. Third, the findings of our study of Sweden builds on experts' views. Future work should attempt to measure actual performance of PPP projects in retrospect to gain deeper understanding of key drivers' rationale for its use.

Comparing the key drivers identified for Sweden with those of other countries based on previous studies in the present study revealed a quite scattered pattern. Therefore, how institutional and macroeconomic factors are linked to key drivers for PPP adoption should be given in-depth consideration in future work. Until now sparse such researches have been undertaken (Wibovo and Alfen, 2014; Verhoest, 2015). Such examinations may yield deeper insights into why different key drivers are of different importance across countries with different profiles.

To practitioners in countries considering adopting PPP for infrastructure provision, having used the procurement method sparsely and infrequently, this study has some important implications. Main motivations for PPP adoption in Sweden as such a country are risk transfer to private sector, reduction of total project cost, and increase in investment alternatives. How risk can be more efficiently allocated between private and public sectors (c.f. Chou et al, 2012) using PPP versus TPP therefore needs careful assessment. Similarly, how the private sector's PPP involvement can contribute to reduction of infrastructure life-cycle costs need to be carefully analysed. PPP may contribute to economic growth by allowing for investments of social value to be undertaken now rather than later whence fitting within the yearly budget. The applicability of these key drivers for PPP adoption should be particularly considered by countries that are similar to Sweden in its institutional, economic and PPP experience characteristics. For Sweden, prior to launching the proposed PPP trial programme, learning from countries similar to it that have used PPP frequently is recommended. This includes e.g. development of a PPP policy, and how to uphold public sector resources for PPP management over projects' lifetime. This way unnecessary pitfalls can be avoided, paving the way for more continued use of PPP in the country whence suitable. At the same time, the generality of the present paper's findings should be considered with caution since country specifics may determine what are key drivers for PPP adoption to a particular country. In fact, there seem to be no clear pattern of key drivers for specific set of countries following previous studies. Moreover, the present study is limited to considering the upside of PPP adoption. Benefits accruing from such drivers need to be weighed against obstacles for its adoption. The latter includes higher financing costs and risk of public-sector lock-in following the long-term contractual periods for PPP procurement (c.f. Babatunde et al, 2015; Osei-Kyei and Chan, 2017). This way a better understanding can be gained of when PPP as a procurement method is to be used.

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Data Availability

The anonymized interview raw data are available upon request by the corresponding author.

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Does the weather influence where tourists want to stay in Norway?

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Abstract

The purpose of this article is to determine if the weather affects the length of tourist stays at Norwegian campsites across different Norwegian regions. We use monthly data on visitors divided by counties and regions for the summer months over a five-year period to accompany the data on weather. We provide insight on the weather through figures, while the article's research question is answered with linear regression models. The conclusion is that there is a significant correlation between temperature and the length of time guests spend in a particular geographical area. But the impact is greatest for those who spend the night in tents and caravans. This analysis failed to prove any correlation between temperature and length of stay. The paper does not investigate other factors that may affect the duration of tourists' stay at a campsite.

Introduction

Camping visitors participate in many outdoor activities, making the quality of their stay weather-sensitive. The optimal weather for summer-time tourism in Norway's landscape is warm and sunny, although the many rainy days introduce risk to the choice of staying in Norway. Around 20% of the tourist stays in Norway is at camping sites (Idsø & Opstad, 2021), which includes everything from low-cost tents to camping huts to luxurious campers. As Mikulić et al. (2017) state, camping tourism is an important part of the tourist sector, due to the public's high demand for this low-cost tourism alternative. The quality of, and thus the demand for, tourism is highly dependent upon the possibility of sleeping under the standards of the chosen tent, cabin, or wagon, so the visit to Norwegian campsites is very seasonal (see Figure 1).

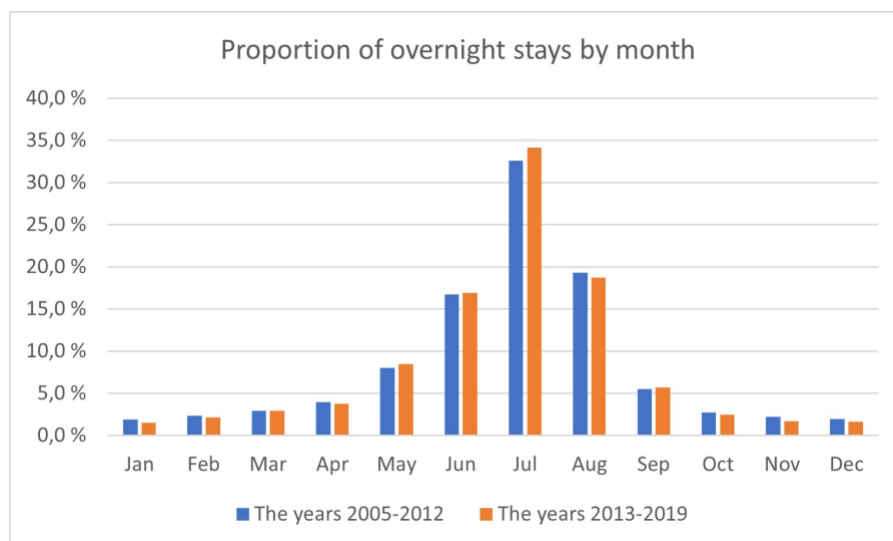


Figure 1. Seasonal stay at campsites (Source: Statistics Norway)

Throughout the year, most campsites only see demand during the summer months, the lengths of which are significantly different depending on the region where the campsite is located. The choice of region for campers is also dependent on the weather (Gössling et al., 2012) and their satisfaction (Becken & Wilson, 2013; Ruddy & Scott, 2014) after the trip. Climate change can modify this picture and make Scandinavia more attractive to visit if the expected negative effect of rainfall does not outweigh the expected positive temperature effect.

In the Western European context, Norway is in a unique position when it comes to different weather zones. The high mountains split east and west, which, combined with Norway's length, creates for distinct weather areas in Norway. In this paper, we exploit these differences and research whether differences in weather and precipitation affect customers' geographical choice of campsites. The choices of whether to camp and where to camp may be affected by the weather, and both short- and close-distance travellers can adjust their travelling plans depending on the weather. The weather projections are only estimates, however, meaning that potential campers can only partly choose the best location to camp as it pertains to weather. We want to research if the dependence of customer demand on weather is reflected in the customer's choice in region of travel. This study looks at the effects of how different weather affects the choice of destination in Norway. However, we will not analyse other factors that may affect the scope and distribution of travellers between different locations in Norway.

Literature review

There are not many empirical studies on the importance of climate on campsite visitors' choice of destination (Hamilton & Lau, 2006). However, there is growing interest in the issue (Becken & Wilson, 2013), and it looks like the climate is an important factor to explain the preferred place. Gössling et al. (2012) reported that more than 50% of visitors to Zanzibar rated the climate as a key factor for their decision to go to Zanzibar. The study by Hamilton and Lau (2006) pointed out that climate ranks at the top of Germans' destination attributes. Other important factors are cultural/historical attractions and nature/landscape, although this study does not include factors besides weather, which includes temperature and rainfall.

Kim et al. (2017) report that weather has a substantial impact on tourist satisfaction. However, they found physical attributes and services to be more important factors than the weather. Tourists enjoy weather deemed normal but dislike weather that is too hot, too cold, too windy, or too rainy. Unforeseen bad weather conditions will have a negative effect on tourists' well-being and activities (Scott et al., 2008). Some researchers report the air temperature as the most important factor for tourist comfort (Bigano et al., 2006). For German tourists, the main reason for visiting the Mediterranean Sea during the summer is the climate (Kozak, 2002).

By using data for the peak summer season from 1960 to 2012, Falk (2013) reported that sunshine duration and temperature have a strong impact on the number of overnight stays (both domestic and foreign). The influence for foreign visitors was only significant with a one-year lag, indicating that weather reports travel by word of mouth from year to year within foreign communities. For domestic visitors, there was a strong relation between stay and sunshine days for the same months, indicating that these tourists can choose whether to go to a given location or to stay or leave another day, depending on the weather. For these tourists, no time lag was recorded.

Another aspect is how visitors will respond to changes in the weather conditions during their stay. Will it affect how long they stay at a particular place? Becken and Wilson (2013) report that bad weather caused visitors in New Zealand to leave a destination earlier than planned, while pleasant weather caused them to stay longer. Other respondents stayed, waiting for the weather to improve based on the weather forecast. Another group continued driving, searching

for better weather. Even though the effect was significant (39%), most of the visitors did not change their timing (61%). Many visitors chose to engage in more indoor activities if the weather was unpleasant (51%).

Tourists who want warm weather and beaches are likely to choose destinations other than Scandinavia. There are probably other factors that are more appreciated and motivational, such as seeing landscapes, mountain hikes, boat trips, cultural attractions, midnight sun, fishing, and other outdoor activities. Even so, the weather conditions can be cruel to the tourism experience. For instance, unpleasant weather can prevent tourists from going fishing or hiking. However, for smaller tourist segments, strong winds and high waves can be perceived as an attraction. According to Denstadli et al. (2011), tourists find the weather good based on what they expect in Northern Norway, and the weather conditions have minor influence on their behaviour. The authors point out that weather forecasts can have a major impact on the choice of tourist destination but that they are not familiar with many studies that have investigated this phenomenon.

According to Hewer et al. (2018), the ideal daytime temperature for summer camping in Canada (Ontario Parks) is 27.4 °C. For the night, the preferred temperature is 19.7 °C. The visitors will find it too hot if the temperature is past 34.8 °C during the day and 28.7 °C during the night, and they find it uncomfortable if the temperature is below 21.3 °C during the day and 10.7 °C during the night. The ideal daytime temperature interval is between 24 and 31 °C. Females prefer slightly higher temperature than males, and older people (aged 55 and up) have a slightly lower ideal temperature than younger people (about 1 °C). Younger visitors are more weather-tolerant than older ones. The results are in line with the finding of Hewer et al. (2015). Using American data, Ma et al. (2020) suggested minimum temperatures for camping to be 11 °C and 4 °C for cabin camping. The temperature impacts depend on occupancy type, with cabin campers being less sensitive than tent campers. The camping occupancy is closely linked to the climate and especially the number of sunshine hours. A considerable part of the stay is weekend-based, with the weather conditions being important for the last-minute decision to go camping. However, Ma et al. (2020) did not capture how shifting weather conditions might influence camping destination and behaviour.

Research hypotheses

Based on the previous research, we postulate two research hypotheses:

1. There is a positive relationship between overnight stay at campsites in a region and temperature (H1).
2. There is a negative relationship between overnight stay at campsites in a region and rainfall (H2).

While common understanding says that the quality of overnight stays at campsites per region is the highest when the temperature is comfortable and when there is little to no rainfall, it is unclear whether the quality of a trip influences the choice of location and duration of the trip. Becken and Wilson (2013) suggest that about 40% of visitors might change the length of stay at a specific destination due to changes in the weather. In this paper, we investigate if the preference for pleasant weather is reflected in the data of overnight stays, thus seeing if changes in weather can have regional impacts on tourist flow in Norway.

Sample and methodology

The sample is based on administrative data publicly available in official statistics of Statistics Norway about monthly overnight stay (domestic and foreign) at campsites for the three summer months from 2015 to 2019 (five years). A monthly overview of temperatures and precipitation is publicly available from the Norwegian Department of Meteorology. We divided Norway into five regions (South, West, East, Middle, and North). Within each region, there

are minor differences in temperature and precipitation. In all, there are 75 observations in the three summer months for five years for each of the five regions.

Table 1: Descriptive Statistics

Descriptive statistics By Region	Norway	East	Middle	North	South	West
Temperature	12.81 °C (2.21)	13.68 °C (1.71)	12.75 °C (1.72)	10.27 °C (2.14)	14.39 °C (1.62)	12.97 °C (1.48)
Rainfall	98.17 mm (48.02)	74.50 mm (24.74)	94.89 mm (36.06)	71.29 mm (26.30)	99.03 mm (35.12)	151.13 mm (62.92)
Overnight stays	335198 (214597)	371544 (128888)	229058 (62649)	179909 (53619)	617889 (288981)	277592 (89403)
Share of tents/wagons	.239 (.056)	.205 (.049)	.234 (.064)	.251 (.051)	.227 (.050)	.277 (.047)
Number of observations	75	15	15	15	15	15

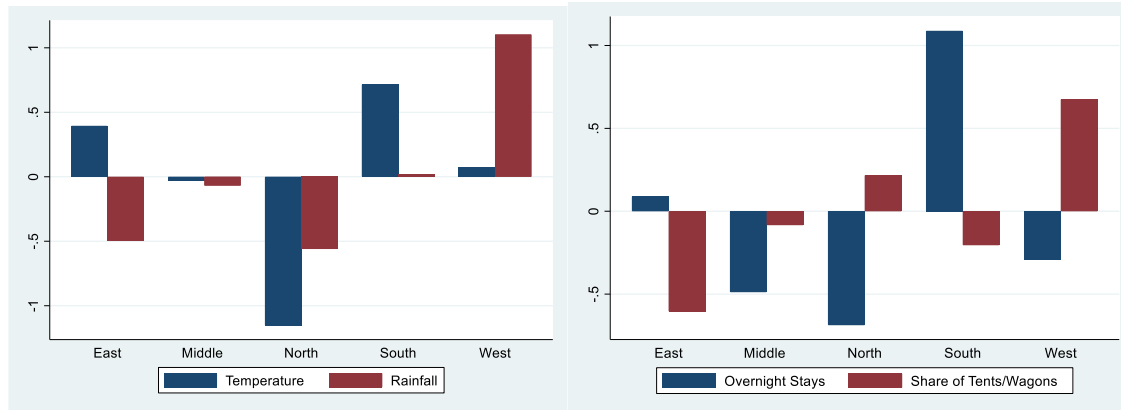
From Table 1, we see that the average temperature in Norway is 12.8 °C during the three summer months, and during these months the average rainfall is 98 millilitres per month. The standard deviation of temperature is 2.2 °C, and it encompasses all regions except the northern part of Norway, which is colder. The western part of Norway distinguishes itself from the rest of Norway in terms of rainfall. It rains over 50% more in the West than in Norway generally. In Figure 2a, we graphed temperature (blue) and rainfall (red) in their standardised values, where we can see that the eastern and middle parts of Norway are at the middle of both measures, the north being colder and the south warmer, while the west has heavy rainfalls.

In the second half of Table 1, we provide the means of overnight stays per region and the share of the campers who camp in tents or wagons. As noted, the latter type of camper is believed to be more sensitive to weather effects, due to the lack of isolation and thus protection from the weather. While the East and West are different from the mean with regards to the makeup of their campers, they are not more than four percentage points away from the Norwegian mean of 24% tent and wagon campers.

The camping sector of the tourism industry is concentrated in the southern region, drawing domestic campers with its warmer climate. Interestingly, the region with the highest share of campers visiting in tents and wagons is also the one with most rainfall: the West. It seems that the West's famous fjords draw this kind of tourism despite the heavy rainfall.

Figure 2a: Temperature and Rainfall

Figure 2b: Overnights Stays



The Appendix presents a more detailed overview of overnight stays, temperatures, and rainfall.

To investigate how, or if, the weather affects how and where tourists choose to camp in Norway, we formulate four regression models. Models 1 and 3 use overnight stays as the dependent variable, while models 2 and 4 use the share of overnight stays in tents and caravans of the total overnight stays as the dependent variable (Y). All models attempt to answer the same question and thus have the same variables of interest: temperature and rainfall. They are described by four explanatory variables: average temperature (X1), average rainfall (X2), the deviation from normal temperature (X3), and the deviation from normal rainfall (X4). The deviations from normal temperature are a ranking between the regions, where the region with the coldest temperature has the value 1, and the region with the temperature has the value 5. The same goes for rainfall, with the rainiest region taking the value 5. Models 1 and 2 use regional observations for the three summer months over five years, resulting in 75 observations. Since the observations are limited, we only include dummy variables controlling for inherent differences in overnight stays between regions. In models 3 and 4, we use observations of counties in Norway for the same five summer periods. There are 16 counties in Norway, meaning that we have 240 observations. In these models, we include dummies to control for yearly and monthly differences, in addition to differences between counties.

Findings

Table 2 confirms there are substantial regional differences in the choice of destination. There is no significant connection between rainfall and share of stay for either all overnight or overnights for tent and caravan. The same result occurs for model 2; therefore, Hypothesis 2 is rejected. However, there is a weak significant link (10% level) between the average temperature and market share and all overnights and for tent and caravan. The impact is slightly stronger for tent and caravan, with a standardised beta of 0.190 compared to 0.107 for all overnight stays. However, there is no association between temperature ranking and market share using regional data. With county-wise observations, the results are different. For all overnight stays, the connection between temperature and stay is not significant. The same conclusion is made for the average temperature. The variance inflation factor (VIF) values are for both temperature and rainfall in the county-wise regression, suggesting multi-collinearity across counties. Counties close to each other have similar weather. By ranking the temperature, we observe a significant effect of temperature on the share of stays in tents and caravans. The effect is not too strong, and the coefficient value is rather small (beta = 0.082). Hypothesis 1 is confirmed, as the temperature seems to affect where and for how long camping tourists stay in Norwegian regions. The evidence of rainfall affecting stays is weak. A reason might be that rainfalls are harder to predict, making it harder to plan around for tourists.

Table 2. Result from Regression Models

	Model 1	Model 2	Model 3	Model 4
	Share of total overnight stays	Share of stays in tents and caravans	Share of total overnight stays	Share of stays in tents and caravans
Temperature (average)	.107* (1.708) [1.909]	.190* (1.755) [1.909]	-.050 (-.750) [6.819]	-.057 (-.687) [6.819]
Temperature (ranking)	.008 (.161) [1.206]	.087 (1.012) [1.206]	.052 (1.568) [1.514]	.082* (2.091) [1.514]
Rainfall (average)	.055 (.826) [2.129]	.100 (.880) [2.129]	.023 (.386) [4.833]	-.057 (-.813) [4.833]
Rainfall (ranking)	-.048 (-.891) [1.411]	-.086 (-.926) [1.411]	.002 (.062) [2.011]	-.036 (-.793) [2.011]
Controlling variables	Regional	Regional	County Year Month	County Year Month
Adjusted R-squared	.848	.547	.825	.757
Observations	75	75	240	240
Standardised T-stat VIF in brackets		coefficients in	in	open parentheses

Discussion

Although researchers report that changes in the weather affect how long tourists stay in a place (Becken & Wilson, 2013), few studies have systematically estimated the extent of this effect. By registering monthly data for the peak summer season over a five-year period, we tried to quantify this impact within Norway. By looking at regional differences in temperature, we proved that this has a significant impact on the proportion holidaying in the different

parts of the country. This is consistent with the findings of Falk (2013). When focusing on regions and market shares, the level of temperature had a positive impact on the share of overnight stays, but the ranking itself based on deviations from normal weather did not result in a significant correlation. As expected, the effect was greatest for those who stayed overnight in tents and caravans. This type of holiday is more sensitive to adverse weather than for those who stay in cabins or campers. Applying disaggregated data and focusing on the number of overnight stays divided by counties give some different results. The most important difference is that we do not have a significant impact between weather and overall overnight stays. This is somewhat surprising, since there are far more observations, and they capture changes within a region. On the other hand, there are still significant effects for the connection between overnight stays in tents and campsites and temperature, based on the ranking of the normal situation. One possible reason why the temperature level did not show any effect is the high VIF value. This is due to multi-collinearity and gives uncertain values on the estimated coefficients.

There may be several factors that explain why the impact of this analysis is not greater. We record the number of millilitres of precipitation in a month, but not how the precipitation is distributed over the period. For a tourist, the experience can be very different from a lot of concentrated precipitation within a few days or hours compared to rain spread out with a little rain over many days. The latter can be perceived as grey and sad. Therefore, it would have been desirable to have registered the division between sunny and grey weather days. Although there is a positive correlation between temperature and sunny days, the average temperature will capture how tourists experience the weather to the same extent. Falk (2013) reports that there is a much stronger link between the number of sunny days and visiting tourists than between average temperature and tourist inflow. If we transfer this result to Norwegian conditions, the impact would have been significantly more marked if data were available on the number of sunny days. Secondly, most people plan their vacation well in advance. According to Denstadli et al. (2011), tourists do not holiday in Norway if they are primarily looking for sun and a warm climate. For both domestic and foreign tourists, there are other factors that motivate (nature experiences, culture, amusement parks, boat trips, etc.). This is related to specific areas. Denstadli et al. (2011) report that if the weather is close to normal, tourists will not focus on this factor. Perhaps it is only when there is a marked deviation from what the visitors expect that they will react. Otherwise, they are not very sensitive to the weather. Results from surveys in New Zealand therefore may not be transferred to Norwegian conditions.

Limitation and conclusion

Using public data over a five-year period, this analysis documents that the temperature affects how long camping tourists stay in a particular place during the peak season. Regions with a high temperature attract a higher proportion of tourists. As expected, this effect is strongest for tent and caravan visitors. The impacts are rather small but are statistically significant. The use of more disaggregated figures by counties resulted in deviations from normal temperature having an effect only on those sleeping in tents or caravans. The analysis could prove some correlation between precipitation and length of stay at the campsites.

Access to data limits this analysis. It would have been desirable to have information that records the number of sunny days and the number of rainy days. Since the weather changes frequently, weekly or daily figures could capture to a greater extent the tourists' change in behaviour due to the weather. It is likely that factors other than the weather motivate camping tourists to holiday in Norway. Therefore, it would be informative to investigate how customers react to changes in weather and the forecasts and also to identify whether there is a difference between domestic and foreign tourists. These may be ideas for future projects.

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APPENDIX

Overnight stay. Temperature and rainfall by regions and counties.

Region	All overnight stay. mean	Std. dev.	Tent & caravan mean	Std. dev.	Average temperature	Dev .	Average rainfall	Percent of normal
Eastern								
I	104380	32634	12970	9769	16.2	1.0	78.3	101.8
II	78892	29400	17149	10092	13.8	0.7	73.4	101.6
III	188270	70598	50451	27249	11.0	0.9	71.7	112.3
Sum	349437	246670	85863	68841	12.8	1.3	98.2	113.1
Southern								
I	108737	39008	31041	15738	14.2	1.0	83.2	113.0
II	186140	82901	23041	14004	16.0	0.7	88.2	109.0
III	127105	68843	41210	32078	12.8	0.7	97.0	112.4
IV	121519	62370	33196	23173	14.3	0.8	103.6	116.2

V	74386	38999	21351	16835	14.7	0.8	123.3	119.6
Sum	617889	288981	149841	97049	14.4	0.8	99.0	114.0
Western								
I	67384	21168	17923	9654	14.2	1.0	154.3	122.0
II	92178	31048	28067	11083	12.0	0.8	173.7	127.6
III	119028	38556	33797	16688	12.7	0.9	125.4	115.7
SUM	277591	89403	79789	37019	13.0	1.2	151.1	121.8
Middle								
I	106640	33758	25206	13408	12.6	0.9	97.3	104.1
II	122416	31417	30775	15869	12.9	0.9	92.5	116.4
Sum	229057	62648	55982	28810	12.7	0.9	94.9	110.2
Northern								
I	106569	34311	30248	16820	11.2	0.5	82.5	110.0
II	41665	11135	10166	3953	9.5	0.3	67.4	110.1
III	31673	9282	6672	2910	10.0	0.4	63.9	122.0
Sum	179908	53619	47086	22733	10.3	0.4	71.3	114.0

The Expected Future Effect of Financial Technology on Sustainable development in Jordan

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Abstract

The world has become, especially in the last three decades, in a permanent state of activity to achieve sustainable development, which is reflected on humanity in terms of economic well-being represented in rational management and preservation of environmental, social and economic resources for future generations. Jordan as many other developing countries seeks to develop the levels of different economic sectors, especially financial one. Fintech can be considered as one of the most influential developments in global and local economies in the last two decades. This article investigates the expected future effect of financial technology on the sustainable development in Jordan. For data collection, a survey via email has conducted on banks and other financing units (i.e., Microfinance, Small and Medium-sized Enterprise Finance and startups). A total of 85 questionnaires were distributed equally to these units. Out of this number, only 65 were returned representing 76.5%. A simple regression used to test the relationships between the variables in this study. The results of the study showed that financial technology will positively affect sustainable development in the future. Therefore, this study recommends those in charge of planning for the Jordanian economy to expand the use of financial technology techniques and formulate policies and instructions that facilitate this task, as well as directing future investments towards projects that adopt advanced technologies.

Key words: Financial Technology, Sustainable Development, Jordan.

Introduction:

Sustainability, In the broadest sense, refers to the ability to maintain or support a process continuously over time (Mollenkamp, 2022). In business and policy contexts, sustainability concern about prevents the depletion of natural resources, maintain and enhancement of environmental, social and economic resources, in order to meet the needs of current and future generations (UN, 1987; Gilbert et al., 1996; Mollenkamp, 2022). Therefore, the world is always concerned to find a state of balance between these three elements of sustainability in order to serve humanity and preserve the heritage for future generations. Therefore, countries began, especially After the global financial crisis of 2008, to develop policies that are concerned with creating jobs, reducing unemployment, increasing economic growth and foster innovation for sustainable growth (OSCD, 2009). On the financial level, this crisis also has led to the creation of creative financing methods for individuals and institutions, especially SMEs and startups. In addition, the revolution of information and communication technologies in the last two decades has crystallized in creating wonderful financial methods and tools called Financial Technology (Fintech). Fintech can be considered as one of the most influential developments in global and local economies. These modern financial ideas have also paved the way for the creation of advanced economic units such as medium, small and micro finance units and startups companies, which are currently contributing to the revitalization of economies and creating new job markets. Fintech also led the traditional commercial banks to keep pace with these developments.

Fintech and sustainability are the two major drivers of change in the financial sector (Fast Invest, 2022). Leong et al., (2020:P.1) referred that "Partnership plays an important role to promote FinTech initiatives for sustainable development, such as enhancing financial inclusion, improving lending decision-making, facilitating diverse business ideas, providing alternative investment opportunities, widening risk coverage, mobilizing capital market, enhancing innovative projects diversity, reducing transaction costs, enabling new distribution channels, improving fund transfer efficiency, enhancing the security of payment process, improving regulatory monitoring system, etc".

Jordan as many other developing countries seeks to develop the levels of different economic sectors, especially financial one. In June 2022, Jordan launched its "economic modernisation vision Unleashing potential to build the future" for the next ten years. It is a comprehensive economic vision, which defines the foundations of the continuous development of the Jordanian economy and has common goals to build a better life for the Jordanian person. Fintech supports sustainable development by ensuring green finance, reducing transaction costs and improving efficiency (Abu-Watfa and Nobanee, 2022). We in Jordan clearly see the general towards to diversified financial technologies. The minister of digital economy assured that Jordan is one of the first countries in adopting financial technology, especially in leadership, innovation, creativity and providing solutions (Almamlaka.TV, 2022). In such developing economy and country, the employees in fintech companies are the most experience in evaluating the effect of fintech

on economy. Consequently, their views on the future of this industry and its potential impact on the Jordanian economy are highly appreciated. Therefore, we hope in this study to highlight the role that financial technology can play in promoting sustainable development in Jordan. Accordingly, this article investigates the expected future effect of financial technology on the sustainable development in Jordan.

The study gains its importance from three aspects. The first one is the scarcity of field studies in this field. In fact, intensive research on fintech began less than 5 years ago. Also, the studies linking Fintech to sustainable development are few compared to the importance of the topic. The second aspect is with regard to Jordan. According to the researcher's knowledge, this study is one of the very few studies in this field, especially the investigation of the relationship between fintech and sustainable development. The third aspect is that it deals with the opinions of individuals working in companies that have adopted financial technology, and thus they are more experienced in evaluating the potential effects of this technology on the Jordanian economy. With Jordan's striving in the next ten years towards reducing poverty and unemployment, expanding the area of the middle social class and raising the incomes of individuals and institutions, the general trend is to achieve sustainable development through the development of all economic sectors, including fintech and the financial sector in general. Accordingly, we hope that this study will contribute to the development of discussions and studies on this subject in the coming periods in a manner that serves the Jordanian economy and researchers in general.

The empirical analysis in this study employed an email-collected sample of 65 firm observations from Jordan in 2022. The finding revealed that the financial technology will positively affect sustainable development in the future. More specifically, the positive effect of fintech was on the three main elements of sustainable development; environmental, social and economic resources. This result supports the results of the vast majority of studies that dealt with the relationship between these two variables, such as the studies of (Abdul-Rahim et al., 2022; Bayram et al., 2022; Museba, et al., 2021; Chikalipah, 2020; Oláh et al., 2020; Raluca et al., 2019; and Gomber, et al., 2018).

The remainder of the article is organized as follows. The second section 2 reviews the related literature. The third section presents a theoretical framework of the main topics; fintech, sustainable development, Jordanian experience and initiation of hypotheses development. The fourth section devotes to the research design and methodology including test of reliability of the study instrument and descriptive statistics. The fifth section supplies the empirical results. The seventh section summarizes the conclusions.

Literature review:

Bai and Ding (1998), have argued that more significant financial innovation could maintain sustainable financial development and promote economic growth. Arner et al., (2020), refereed that Authors argue that fintech is the key driver for financial inclusion; and sustainable development and digital identity, interoperable electronic payments systems, electronic provision of government services and payments, and design of digital financial markets and systems are the four pillars for an economy to leverage fintech for sustainable development. Regarding the relationship between fintech and sustainable development, many studies have examined this relationship, which indicates its existence in general. Shin and Choi (2019), Revealed that FinTech services are an effective prompter for sustainable development across all financial and non-financial industries in Korea. Turkey was also able to promote the responsible consumption goal for sustainable development by improving fintech solutions on payment systems with educational content on this goal (Bayram et al., 2022). Moreover, some studies explicitly indicated the relationship of fintech with the elements of sustainable development. for instance, Abdul-Rahim et al., (2022), demonstrates that FinTech adoption models must exploit consumer sentiment (e.g., fear) to optimize FinTech's benefits and risks, thereby creating FinTech natives to realize its impacts on economic, environmental, and social sustainability. Raluca et al., (2019), shows that FinTech has significant effects on social and environmental ecological benefits. Moreover, Many studies have positing the implication of FinTech adoption on sustainability and achieving the Sustainable Development Goals (SDGs) (Gomber, et al., 2018; Chikalipah, 2020; Oláh et al., 2020; Museba, et al., 2021). Abdul-Rahim et al., (2022) Also, reveals that FinTech behavioral adoption positively and significantly impacts sustainability. In a related context, the result of study conducted by Deng et al., (2019), shows the existence of a U-shaped relationship, where they are found that there are significant regional differences in fintech impact on sustainable development. It was significant in China's eastern and central regions and insignificant in the western region.

Economic growth is a primary objective of sustainable development. In this context, (Malmendier, 2009) said that there is general consensus in academia that FinTech can significantly affect economic growth. (Liu et al., 2021; Ding et al., 2022) also established a positive association between fintech and economic growth in China. Bu et al., (2022) show that FinTech has a significant promoting effect on real economic growth, manifested as a U-shaped relationship and double threshold effect. On the other hand, Li, Jin, and Tian, (2019), studied the effect of fintech on China's economic growth and found no relationship between fintech and economic growth using the vector autoregressive

(VAR) technique. sustainable finance is a major driver of economic growth and sustainable development. In this area, (Chueca Vergara and Ferruz Agudo, 2021), concluded that sustainable finance and Fintech have many aspects in common, and that Fintech can make financial businesses more sustainable overall by promoting green finance. Based on empirical findings, Li et al., (2020), also provided suggestions to promote the sustainable development of internet finance and the whole financial ecosystem. Where (Cen and He, 2018) referred that fintech promotes both green finance and sustainable development and has redefined financial services. Finally, some studies dealt with human behavior as the ultimate goal of sustainable development and fintech. For instance, Nangin, et al., (2020) addressed the relationship between fintech application (i.e. brands of Fintech and Sakuku) and some issues of interest to the customer (i.e. Perceived Ease of Use, Security, and Promotion on Trust and Its Implications on Fintech Adoption). Alsmadi et al., (2022), also found this positive relationship with factors including Perceived usefulness, perceived ease of use, trust and social impact. Goswami et al, 2022, have found that Fintech affect positively Financial Inclusion especially factors such as behavioral intention and Social Influence and perceived ease of use.

Theoretical framework:

Sustainable Development:

Sustainable development has been defined in many ways (Berceanu, 2012:P.37; Parkin, 2000). Despite the multiplicity of these definitions, the definition introduced by Brundtland Commission remains the most widely used to express the concept of sustainable development (Cerin, 2006; Stoddart, 2011). The Brundtland Commission has defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987:P43). All definitions of sustainable development require that we see the world as a system (Berceanu 2012: P.37). (IPCC, 2012:P.5) has wrote a report about transformations for sustainable development, where it defined “transformation” as a change in society that alters the “fundamental attributes of a system (including value systems; regulatory, legislative, or bureaucratic regimes; financial institutions; and technological or biological systems)”.

However, Parris and Kates (2003) have discussed the ambiguity of sustainable development. To clarify this ambiguity, Parris and Kates (2003) built their discussion on two main questions; (1) what is to be sustained: three major categories: nature, life support systems, and community. (2) what should be developed: people, economy, and society. Well, the answer on these two questions is in the sustainable development goals (SDGs) which determined by the united nation. The SDGs are summarized in developing three main fields; environment, social and economic. In this regard, Connelly (2006), argues that through production and consumption patterns that do not deplete natural resources, sustainable development is based on standards that protect the environment, promote equitable distribution of GDP and reduce poverty, which in fact means the need for mutual reinforcement of economic growth, social development and environmental protection. The aim of the concept of sustainable development is to achieve a balanced relationship among them (Berceanu 2012:P.59).

However, those who follow the history of the concept of sustainable development will find that it has witnessed important changes throughout its history (Klarin, (2018), leading to the 2015 United Nations report on SDGs (UN, 2015), which drew a road map for 2030 with the aim of improving human life and preserving resources for future generations. This report has "called for action by all countries - developed and developing - in a global partnership to recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests" (UNSDGs, 2015). Transformations for sustainable development must be based on the reform of the relationships between the environment, the economy and society. New mindsets and behaviors, incentives and shared values must work towards a sustainable future (UN, 2016).

3.2. Financial Technology (FinTech):

There are some references that traced the history of financial technology to the late nineteenth century. For instance, Arner, Barberis and Buckley (2015) have divided the interlinkage of finance and technology over three distinct eras, which are FinTech 1.0 (1866-1967); FinTech 2.0 (1967-2008) and FinTech 3.0 (2008-present). For the recent years, Arner, et al., (2015) have characterized the era in emerging markets in Asia and Africa regions as FinTech 3.5. (Bureshaid et al., 2021:P. 125). Stated that "Until date, there is no universal definition of FinTech in the literature". In general, we can say that the basic concept of financial technology relates to the relationship between computer software and communication technology and the financial industry. However, this relationship has been confirmed in the various definitions presented for financial technology (Arner, et al., 2015; Micu and Micu, 2016; FSB, 2017; KPMG, 2019; Morgan et al., 2019; Leong et al., 2020; Juita, 2020; W'ojcik, 2021). More specifically, “FinTech” as a term encompasses to includes IT innovative financial solutions, financial services providers such as banks and

insurance companies. The term also refers to the start-up company's players that emerged after the global financial crisis and proved away as new industry (Alt et al., 2018; Arner et al., 2016). These days, FinTech has developed to includes five major areas: (1) finance and investment, (2) operations and risk management, (3) payments and infrastructure, (4) data security and monetization, and (5) customer interface (Arner, et al., 2015, P.3).

From other side, the term "fintech company" describes any business that uses technology to modify, enhance, or automate financial services for businesses or consumers (Columbia engineering boot camps, 2022). Leong et al., (2020) defined FinTech as a cross-disciplinary subject that combines finance, technology management, and innovation management. However, for Jordanian companies addressed in this study the term FinTech is used to describe IT innovative financial products and services.

3.3. Jordanian experience:

Jordan has witnessed a remarkable development in the field of financial services and even access to startups financial technology institutions. "Jordan has been witnessing a remarkable growth in the supply of financial services due to many factors including: (1) The increasing demand from start-ups and entrepreneurial activity over the past decade led by the ICT sector and (2) Government's desire to diversify the economy and bring out entrepreneurial and innovative potentials to the market, which has attracted many international supporting partners" (USAID, 2019). Those who follow and are interested in the business environment, the Jordanian economy, and the programs that target sustainable development, will find that Jordan is walking in accelerated steps in this field. In Jordan, although fintech is still new, the number of fintech companies is increasing rapidly (Alsmadi et al., 2022). The website of (tracxn, 2022) has published in August 30, 2022 that There are 51 FinTech startups in Amman. Recently, two junior companies that established in Jordan;(your payments and Hyper Baye), have entered the "Forbes" list of the most powerful financial technology companies in the Middle East region for the year 2022 ([alghad, 2022](#)). In this regard, Halaiqah and Ghannam (2020: P.5) have wrote that "In Jordan, fintech start-ups are emerging, digital banking is spreading and key digital concepts and solutions are leading the scene; from cloud computing, blockchain, and mobile payments to data analytics. The demand by customers is growing and the adoption of digital services is on the rise. In Cisco's Global Digital Readiness Index 2019, Jordan was placed in the "Accelerate" level, out of three levels: Activate, Accelerate, Amplify".

In general, we can say that fintech exists in approval varieties of business area. (Fitz, 2021) referred that The Jordanian companies that use modern technologies can be classified into many different categories starting from cutting edge startups to established brands. these categories include FinTech, EdTech, Fashion, Food and Beverage, Transportation, Management Consulting, Gaming, Outsourcing, Business Development, Professional Services, E-learning, and Enterprise Companies.

Despite the rapid growth of innovative financial technology at the international and local levels, there are some risks that accompany these developments, the most important of which at the Jordanian level is the lack of clear regulatory, legal and supervisory frameworks that limit these risks. The Central Bank of Jordan (CBJ) believes in the necessity of keeping up with rapid developments in financial technology (FinTech) to serve the banking and financial sector in a manner that ensures safety, resiliency and stability (CBJ, 2018). In line with these developments, CBJ has begun to take serious steps in developing a regulatory environment to accommodate developments in financial technology such as promote financial inclusion and Establishment of the Innovation Regulatory FinTech sandbox.

3.4. Hypotheses initiation

Fintech companies are one of the most important developments in the financial sector (Goswami, et al, 2022). Zeidy (2022) referred that Fintech is part of the digital economy that has produced innovations that have transformed the way we live, even as productivity growth has been slowing across advanced economies for decades. in this regard, We can know the strategic role that fintech could play in addressing the financing challenges of the sustainable development from the agenda of workshop conducted by UNEPFI in 2021. the agenda included the role of fintech in: improving financial inclusion of underserved groups (low-income citizens and SMEs), building resilient infrastructure (e.g., energy), fostering innovation (small holder agriculture, sustainable and land use), and promoting sustainable industrialization in the MENA region (Unepfi, 2021). Based on literature and theoretical framework discussed the fintech and sustainable development in this study, we can easily notice the role that financial technology can play in sustainable development. Therefore, we can draw the following hypotheses:

H0: it is expected in the future that the financial technology will positively affect sustainable development in Jordan.

H0: it is expected in the future that the financial technology will positively affect economic sustainable development in Jordan.

H0: it is expected in the future that the financial technology will positively affect social sustainable development in

Jordan.

H0: it is expected in the future that the financial technology will positively affect environmental sustainable development in Jordan.

4. Data and methodology

4.1. Data

This study aims to identify the future impact of financial technology on sustainable development from the point of view of employees in banks and medium, small and startups companies in the Jordanian market. Therefore, the study population consists of institutions that depends partially or wholly on financial technology to provide their financial services. The questions on fintech and sustainable development were based on a five-point Likert scale, ranging from strongly agree to strongly disagree. The instrument was developed after extensive reviewing of the related literature. Then, it piloted among 7 practitioners (professionals and academics) to test its validity and ensure that its phrases were appropriate. 85 final questionnaires were distributed equally via email among Jordanian banks and medium, small and startups companies. Out of this number, 65 were completed and useable representing 76.5%. The methods of analysis employed in the study were descriptive statistics, simple regression. In addition, Cronbach's alpha test of internal consistency of study variables was used to test reliability of instrument.

4.2. Variables

4.2.1. Dependent variables

The main dependent variable in this study is the sustainable development (SD). Actually, this variable has divided to three general dimensions which are SD- Economic, SD- Social and SD- Environment.

4.2.2. Independent variable

Financial technology (Fintech) is the main independent variable in this study.

4.2.3. Reliability of the Study Instrument

Cronbach's alpha was used to test stability of the measuring instrument. The values exceeded the level of 70%, which is an acceptable ratio (See Table 1).

variables	Cronbach's alpha
Fintech	0.716
SD	0.867
SD- Economic	0.767
SD- Social	0.761
SD- Environment	0.751

4.2.4. Descriptive statistics

Table 2 summaries descriptive statistics from variables which used in this study. The data that processed were 65 banks and medium, small and startups companies in the Jordanian market.

variables	Obs	Mean	Std. Dev.
Fintech	65	3.6462	.72407
SD	65	3.7778	.56843
SD- Economic	65	3.8641	.68585
SD- Social	65	3.5410	.75865
SD- Environment	65	3.9282	.62289

As we can see from Table 2, all the variables have achieved a rather high response rate. Which suggests the positivity of financial technology in its relationship to sustainable development.

5. Empirical results

In this study, simple regression analysis was conducted for testing hypotheses to investigate the expected future effect of financial technology on sustainable development in Jordan. The basic assumptions of regression tests for all four hypotheses have been met. For normality test, the scatter plot scheme showed that 95% of the errors (standardized residuals) fall within the range (2, -2), indicating that these errors are distributed normally (Anderson et al., 2008).

5.1. H0 null hypothesis

A simple regression was run to test if the future financial technology significantly predicted sustainable development in Jordan (Table 3). The fitted regression model was: (SD =2.309 and Fintech =.403). The overall regression was statistically significant ($R^2=.263$, $F(1, 63)=22.531$, $p<.000$). It was found that Fintech significantly predicted SD ($\beta =.403$, $p<.000$).

Table 3: Regression results for hypothesis (H0); the expected future effect of Fintech on Sustainable Development (SD).				
<i>Coefficients</i>				
	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
constant	2.309		7.318	.000
Fintech	.403	.513	4.747	.000
Model Summary: ($R^2 = 0.263$), ANOVA:($F = 22.531$, $P = 0.000$)				

5.2. H01 null hypothesis

A simple regression was run to test if the future financial technology significantly predicted economic sustainable development in Jordan (Table 4). The fitted regression model was: (SD-Economic =2.485 and Fintech =.378). The overall regression was statistically significant ($R^2=.159$, $F(1, 63)=11.944$, $p<.001$). It was found that Fintech significantly predicted SD ($\beta=.378$, $p<.001$).

Table 4: Regression results for hypothesis (H01); the expected future effect of Fintech on SD- Economic				
<i>Coefficients</i>				
	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
constant	2.485		6.112	0.000
Fintech	.378	.399	3.456	.001
Model Summary: ($R^2 = 0.159$), ANOVA:($F = 11.944$, $P = 0.001$)				

5.3. H02 null hypothesis

A simple regression was run to test if the future financial technology significantly predicted social sustainable development in Jordan (Table 5). The fitted regression model was: (SD-Social =2.146 and Fintech =.383). The overall regression was statistically significant ($R^2=.133$, $F(1, 63)=9.690$, $p<.003$). It was found that Fintech significantly predicted SD ($\beta=.383$, $p<.003$).

Table (4): Regression results for hypothesis (H02); the expected future effect of Fintech on SD- Social				
<i>Coefficients</i>				
	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
constant	2.146		4.699	.000
Fintech	.383	.365	3.113	.003
Model Summary: ($R^2 = 0.133$), ANOVA:($F = 9.690$, $P = 0.003$),				

5.4. H03 null hypothesis

A simple regression was run to test if the future financial technology significantly predicted environment sustainable development in Jordan (Table 5). The fitted regression model was: (SD- Environmental = 2.294 and Fintech =.448). The overall regression was statistically significant ($R^2=.271$, $F(1, 63)= 23.456$, $p<.000$). It was found that Fintech significantly predicted SD ($\beta=.448$, $p<.000$).

Table 5: Regression results for hypothesis (H03); the expected future effect of Fintech on SD- Environmental				
<i>Coefficients</i>				
	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
constant	2.294		6.673	.000
Fintech	.448	.521	4.843	.000
Model Summary: ($R^2 = 0.271$), ANOVA:($F = 23.456$, $P = 0.000$),				

6. Conclusion

This study was carried out to investigate the expected future effect of financial technology on the sustainable development in Jordan. These results of the study support the results of the vast majority of studies that dealt with the relationship between these two variables, where it found significant positive relationship between fintech and sustainable development. The current study found that financial technology, in general, will positively affect sustainable development in Jordan in the future. Moreover, this effect of financial technology extends to all of general dimensions of sustainable development, which include the economic, social and environmental dimensions. Based on these finding, this study recommends those in charge of planning for the Jordanian economy to expand the use of financial technology techniques and formulate policies and instructions that facilitate this task, as well as directing future investments towards projects that adopt advanced technologies.

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Poverty, employment and economic growth in SADC countries, an analysis of employment elasticity

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Abstract

There is usually a seemingly unquestionable link made between poverty, unemployment and economic growth or the lack thereof. The direction of the relationship in that association notwithstanding, it is not an illogical connection. The expectation is that when an economy grows, there will be enough trickle down to the people at the bottom to the extent that there will be some changes in the poverty position of the country or region. It is also assumed that economic growth will be associated with an increase in economic activity, which may be followed by an increase in demand, or visa-versa and this has to have a corresponding increase in jobs and a reduction in unemployment. The evidence on the ground is not always that straight forward or obvious. This paper investigates the validity of this classical understanding for the SADC countries by investigating both the long run and short run relationship of these three macro-economic variables. The paper uses the Panel ARDL model and makes conclusions based on the statistical results.

Keywords: Poverty; unemployment, economic growth, ARDL, SADC.

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