RESEARCH REPORT

What is the impact of cashless gaming on gambling behaviour and harm?

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Victorian Responsible Gambling Foundation

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Conflict of interest declaration

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Enquiries

Rosa Billi +61 3 9452 2625
rosa.billi@responsiblegambling.vic.gov.au

Victorian Responsible Gambling Foundation

Level 6, 14–20 Blackwood Street
North Melbourne
Victoria 3051

PO Box 2156
Royal Melbourne Hospital
Victoria 3050

Telephone: +61 3 9452 2600
Facsimile: +61 3 9452 2660
ABN: 72 253 301 291

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What is the impact of cashless gaming on gambling behaviour and harm?

Sarah Hare

Schottler Consulting

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Victorian Responsible Gambling Foundation

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Terms used in this report

Terms	Meaning
Card based cashless	Refers to cashless gaming where a card is swiped or tagged each time a gambler wishes to pay for gambling.
Cashless gaming/gambling	Refers to paying for gambling without using notes or coins such as through use of a credit card or debit card. Victorian legislation refers to 'cashless gaming' under the Victorian Gambling Amendment (Cashless Gaming) Regulations 2019, however, both cashless gaming/gambling are used interchangeably in this report.
Contactless payments	Ability to make a payment without touching a keypad such as through use of Near Field Communication (NFC) (proximity sensors).
Deposit limit	Refers to the total amount that can be kept on a gambling account for use during gambling.
Digital wallet	A digital payment system for storing and transacting money for the purpose of making digital payments.
Mental accounting	The theory of mental accounting proposes that consumers assign 'labels' to sources and uses of money and track expenses using a mental accounting system (Henderson and Peterson, 1992; Thaler, 1980). Mental accounting processes are proposed to serve three main purposes – They help simplify decisions, maintain self-control and maximise pleasure from consumer decisions (Antonides and Ranyard, 2017; Zhang and Sussman, 2018). An an example of mental accounting, consumers may label expenditure in different categories such as money for 'leisure', 'groceries' and 'rent'.
Multifunctional cards	Multifunctional cards are cards which bundle payments together with other features (e.g., loyalty programs, user identification etc.).
Pain of payment	Used in research, the pain of paying is experienced when consumers part with money to purchase goods/services. Cards are thought to reduce pain of payment, as they are a token for money (i.e., they are not real money hence expenditure is less visible and less salient when payment occurs). Feeling the 'pain of payment' is proposed to assist with consumer self-regulation of expenditure (Prelec & Loewenstein, 1998).
Pre-commitment	The ability to set time and/or money limits on gambling.
TITO	Refers to ticket in ticket out, a system where gamblers insert a ticket with the cash equivalent amount on the ticket into a gambling device for gambling. Once the gambler leaves, they can re-print a new ticket with the unspent balance and take it to a different gambling device. Tickets are thus a cashless payment method.
Working memory	Baddeley and Hitch (1974) conducted pioneering work to identify the concept of 'working memory' and its role in human information processing. According to the authors, working memory is a system with limits on both its storage and processing capabilities.

Executive summary

This report presents a rapid review of research literature to examine the effects of cashless gaming from a gambling harm-minimisation perspective. Cashless gaming involves the use of non-cash gaming tokens for land-based gambling. The review was prepared during late June 2020 for the Victorian Responsible Gambling Foundation (the Foundation).

The Foundation sought to better understand the effects of cashless gaming on gambling behaviour and harm, given the potential for cashless gaming to become more widely used across Victoria due to COVID-19.

As a Foundation role is to address the determinants of problem gambling, it was considered important to understand the potential for widespread cashless gaming to harm the Victorian community.

Key objectives

Within this context, specific objectives of the rapid review were to:

1. **Examine the national and international context of cashless payments**
2. **Explore the possible effects of cashless gaming as identified in research literature**
3. **Identify recent jurisdictional developments in cashless gaming due to COVID-19**

Cashless gaming in Victoria

On 30 January 2019, the Gambling Amendment (Cashless Gaming) Regulations 2019 introduced new regulations allowing non-cash gaming tokens to be made available at Victorian pub and club EGM venues. Technical standards were also published by the Victorian Commission for Gambling and Liquor Regulation (VCGLR) for the operation of cashless gaming on EGMs.

Technical standards permit both ticket in ticket out (TITO) and card based cashless (CBC) gaming to be provided in Victorian EGM venues. While Crown casino also provides cashless gaming, separate legislation exists for casino operations.

Within this context, the Foundation wanted to gain a comprehensive understanding of research that may provide insight into the possible effects of cashless gaming, should it be more widely adopted across Victorian pubs and clubs due to COVID-19.

Types of gambling of relevance to this review

Gambling products in scope of the current review were EGMs and gambling products in land-based venues and retail outlets (e.g., sports or race betting at the pub, keno at the club, retail lottery purchases, etc.).

While some useful research relating to online gambling is drawn upon in this review, the use of cashless payment technologies for online gambling specifically was considered outside the scope of products of interest to the review. Interactive gambling more generally, however, is acknowledged as a special topic that may also benefit from future research on payment technologies.

Findings from consumer behaviour and cognitive psychology literature

Major findings of the review are presented as follows:

1. Consumer behaviour literature indicates that cashless payment methods are generally associated with increased expenditure. Evidence appears to support that this applies to credit cards, debit cards, and potentially also mobile payments (using eWallets).
2. Literature relating to the 'pain of payment' – including recent neurological evidences – suggests that cashless payment methods are largely associated with less 'pain of payment' when compared to cash. This suggests that cashless payment methods have an 'easy money' effect and that cash is better for expenditure regulation.
3. Low salience payments have been found to be difficult to track and undermine budgeting, when compared to high salience payments. Electronic transactional information (e.g., bank statements) has also been found to be more complex to interpret, when compared to printed statements.
4. Certain segments in the community may have difficulties with working memory or mental accounting, which is required in budgeting and expenditure management.

   These may include older people, people with comorbidities – such as anxiety and depression – and people with low financial literacy and low education. Such groups may potentially experience issues with transactional expenditure information in cashless gaming.

Findings relating to cashless gaming from gambling research literature

1. Little gambling research has examined the unique effects of cashless gaming as a payment method, when compared to cash (as distinct from other features of cashless gaming such as pre-commitment).
2. Many of the benefits of cashless gaming have been conflated with the benefits of other gambling harm-minimisation tools (e.g., player tracking, pre-commitment effects have been confused with the effects of cashless gaming).
3. While the discrete effects of cashless gaming relative to cash have not been examined, some consumer benefits of cashless gaming have been claimed including:
   a. The ability to store money on a card
   b. Not having to have to wait for venue staff for hand-pay outs
   c. Making it easier to move from EGM to EGM
   d. Being able to transfer small amounts of money to and from the EGM credit meter
   e. Being able to continue play uninterrupted (e.g., gamblers do not need to access EFTPOS for cash or interact with a staff member).
4. While some gamblers indicate that cashless gaming may help with management of gambling expenditure, others report that it makes expenditure management more difficult. This may highlight individual differences within gamblers (although the reasons for differences remain unclear).
5. Access to any cash amounts may facilitate gambling and especially in higher risk gamblers. This may be relevant to the amounts stored on cashless gaming cards.
6. Tokenisation of money tends to lead gamblers to spend more, when compared to cash (and presumably with less conscious reflection).

7. Online gambling has been found to be harmful to gamblers in part due to the cashless payment method and in part due to the tokenisation of money (i.e., credit/debit cards are used to gamble online and such cards are a token for money).
8. Eight structural characteristics of cashless gaming have potential to influence the level of gambling harm experienced by gamblers.

Other findings with implications for cashless gaming

1. While many jurisdictions are increasingly moving towards cashless gaming, research also highlights that some vulnerable members of society may be at risk. In Australia, these may include both older people and people in the lower two income quartiles.
2. While research cannot identify how best to reduce the risks of cashless gaming, literature research points to some potential value of making the 'pain of payment' of cashless gaming equivalent to, or as close as possible, to cash.

Conclusion

In conclusion, the current rapid review has identified substantial and concerning evidence that cashless gaming using monetary substitutes such as gaming cards will likely facilitate less controlled gambling behaviour and potentially lead to gambling harm in some consumers. It has also identified the potential for some vulnerable segments of society to be negatively impacted by cashless gaming.

This is largely attributed to research evidence that suggests that the 'pain of payment' in cashless payment methods is lower than when using cash.

Together, findings point to the need for further research to not only establish who is affected by cashless gaming (or whether all gamblers are affected), but to also identify how gambling may be affected by all payment methods including credit cards, debit cards and mobile payments using eWallets.

The second priority is to identify how such payments can be made closer to, or equivalent to, cash. The third priority is then to identify whether and how other harm-minimisation tools can be used to mitigate the effects of cashless gaming and associated cashless payment methods used in gambling.

Discussion of findings – what does research tell us about cashless gaming?

State of the evidence for cashless gaming

A review of literature clearly highlights that limited research has examined the effects of cashless gaming on gambling expenditure and behaviour. While research has established that electronic gaming machine (EGM) cashless gaming offers a range of benefits to both gamblers and venues, research has not examined the discrete effect of cashless gaming itself on gambling expenditure, as distinct from cash-based gambling.

This is of concern, as it implies that cashless gaming may have been widely implemented across the world, without understanding its true effects on gambling behaviour. Two past papers, discussed immediately below, have noted that many jurisdictions across the world have identified that there is a distinct lack of empirical evidence to identify how cashless payments affect gambling.

In particular, this was noted in the 2004 NSW IPART report and observed by Parke et al (2008) in a survey of gambling regulators. Some recent comments by international regulators also highlight that the discrete effects of cashless gaming may be conflated with the effects of player tracking and other card-based harm-minimisation tools.

Indeed, as cashless gaming is frequently offered together with such tools, it is assumed that in itself it offers a harm-minimisation benefit. This review would argue, however, that this cannot be concluded, as there is no clear research evidence on the beneficial effects of cashless gaming itself, as distinct from use of cash.

Also of concern is that research indicates that many of the consumer protection tools available in cashless gaming are not used by gamblers. In particular, Australian pre-commitment trials involving cashless gaming have consistently demonstrated that limits are not used by many gamblers. A similar observation was made by Gainsbury et al (2019) in relation to the use of harm-minimisation tools in internet gambling (a type of 'cashless gaming'). Accordingly, this highlights the need for a more informed understanding of the true effects of cashless gaming from a consumer protection perspective.

So what do we actually know about cashless gaming?

While the discrete effects of cashless gaming on gambling expenditure and behaviour have not been researched, some useful research is available to highlight consumer experiences with cashless gaming. In particular, the research of Nisbet (2004) and three pre-commitment evaluations based on cashless gaming (Schottler Consulting, 2005, 2008, 2009) have provided some insight about how cashless gaming is received by gamblers.

However, as cashless gaming in these studies was intertwined with other tools (e.g., card-based pre-commitment or TITO), the studies cannot 'unravel' the discrete effects of cashless payment methods on gambling, as distinct from the use of cash.

Such research, however, has consistently established a similar set of overall observations about the benefits of cashless gaming based on gambler perceptions. Studies identified that gamblers found it convenient to store money on a card, found it beneficial not to have to wait for venue staff for hand-pay outs and also found it useful being able to transfer small amounts from the EGM credit meter to a cashless gaming card.

This latter aspect also appeared to have some possible harm-minimisation benefits in that gamblers did not feel obligated to spend the remaining small amounts on the meter, as money could be easily transferred back to the card. Similarly, not having to wait for pay outs may have reduced the temptation to continue gambling. Accordingly, these represent some positive benefits of cashless gaming, as based on gambler perceptions.

All studies similarly found that *some* gamblers held a perception that the cashless card could be helpful for money management. However, this was not a consistent finding for all gamblers, highlighting the potential for individual differences and preferences.

It was noteworthy that some gamblers felt that it was actually easier keeping track of their expenditure on a card, while others felt that it was more difficult, when compared to cash - *If you are taking cash out of your wallet, you are more aware of how much you are spending. With the card, you do not realise how much you have spent* (Schottler Consulting, 2009, p33).

While discrete effects of cashless gaming could not be 'untangled' from other tools used in these studies (as these studies were mainly studying gambler pre-commitment), feedback highlights that some gamblers may find cashless gaming useful for money management, while others feel that it makes money management more difficult.

This highlights that future research needs to examine the discrete effect of cashless payment methods above and beyond the effects of other harm-minimisation tools.

What can we learn about the possible harm of cashless gaming based on consumer behaviour literature?

While gambling research has not made significant progress in identifying the effects of cashless gaming, research from the field of consumer behaviour and cognitive psychology highlight that cashless gaming is quite likely to be associated with overspending in gamblers.

Indeed, fairly consistent and comprehensive evidence from studies of cashless payment methods highlight that cashless payment itself is associated with increased expenditure. One of the most significant and consistent findings in this body of research is that consumers spend more when exposed to credit cards, or when paying by credit card, when compared to cash (e.g., Soman and Cheema, 2002; Shimp and Moody, 2000).

In addition, credit cards have been shown to 'prime' consumers to think of product benefits, instead of making cost considerations (e.g., Chatterjee and Rose, 2012) and are frequently seen as 'easy money' (e.g., Wong and Lynne, 2017).

Other studies have framed the credit card effect in terms of a higher consumer 'Willingness to Pay' (Prelec and Simester, 2001), and this has been established for other non-cash methods of payments including stored value cards (e.g., Soman, 2003), multifunctional bank cards (Gafeeva et al., 2018) and interestingly, also for debit cards (Runnemark et al., 2015).

In relation to debit cards, similar effects to those established for credit cards have been demonstrated. Runnemark et al (2015), in particular, identified that consumers were willing to pay more for identical products with debit cards (than with cash), highlighting that cash made it easier to control spending.

The authors then highlighted the need to provide improved feedback mechanisms in debit cards for consumers – including potentially displaying balances on cards (e.g., in 'next generation' credit cards).

Also of concern is the effect of debit cards in making low income consumers less sensitive to price cues. This was demonstrated by Greenacre and Akbar (2019), where consumers using a cashless debit card became less sensitive to price cues when using the card to buy groceries, relative to cash. Accordingly, this may highlight the risk of consumers with limited money spending more with cashless gaming cards.

The reasons why cashless cards are more strongly associated with payment ease has been linked to research identifying that they are associated with a lower 'pain of payment'. In particular, credit cards have been found to have the lowest pain of payment, followed by debit cards then cash. In this respect, cash is considered the most 'painful' method of payment.

What is 'pain of payment'?

The pain of paying is experienced when consumers part with money to purchase goods/services. Cards are thought to reduce pain of payment, as they are a token for money (i.e., they are not real money hence expenditure is less visible and less salient when payment occurs). Feeling the 'pain of payment' is proposed to assist with consumer self-regulation of expenditure (Prelec & Loewenstein, 1998).

Whether new 'contactless' payment methods – such as mobile payments – provide the same 'pain of payment' is also of research interest. While this has not been extensively examined, a recent study by Boden et al (2020) highlighted that contactless mobile payments may have a similar 'pain of payment' to credit cards.

This may suggest that all forms of cashless payment – including newer forms – will never be the same as cash in relation to the 'pain of payment'. Research by Eschelbach (2017) similarly suggested that cash can help reduce the temptation of spending unnecessarily, given that it reinforces the pain of payment.

Payment salience and distinctiveness have also emerged as potentially problematic in cashless payment methods. *Highly salient* payments have been proposed to make it easier for consumers to track and place expenses into mental accounts, while *less salient* payments have been found to be more difficult to track and undermine budgeting (e.g., Heath, 1995).

As cash handling is not present in cashless gaming, this may suggest that cashless cards are associated with increased difficulty in (at least immediately) monitoring expenditure.

While findings of attitudinal and behavioural studies could be open to debate, recent neurological research investigating the pain of payment for cash is quite compelling. Research by Ceravolo et al (2019) demonstrated through use of functional MRI that, use of cash triggers brain activity, which is consistent with processing of an adversive event, when compared to cards or a smartphone. Accordingly, this higlights that cash is very likely to be better for self-regulation and more considered decision making.

Who may the 'easy money' effect of cashless payments apply to?

Given the concerns that may be raised by cashless gaming, the next critical question relates to whether the 'easy money' effect of cashless cards may apply to everyone using such cards, or whether it just applies to certain segments of the population.

Supporting the possibility that the effect is universal is research by Naderer et al (2016). This author identified that showing credit cards and Visa symbols on Monopoly game credit cards primed children and led to greater expenditure in an online shopping task. Such results may provide indirect evidence that this effect could potentially occur in everyone and that it may not be related to previous experience with or use of credit cards.

Other research highlights that some groups in the community may have difficulty keeping complex information in working memory (e.g., Gold et al, 2019, Li et al, 2018) or have difficulty with mental accounting (Muehlbucher and Kirchler, 2019). Working memory could be argued as relevant to understanding cashless accounts and expenditure, as an effective working memory would be required to process information.

Evidence from a study comparing the ease of understanding an emailed versus paper bank statement indirectly highlights this issue. Electronic information, as may be associated with cashless transactions (e.g., online or electronic cashless accounts) may be difficult to process.

This study by the London School of Economics (2015) found that electronic information, as is typical of cashless cards, is more cognitively complex for people to process. People in the study using emailed statements were less accurate in reporting expenditure and performed worse than those using printed statements. Accordingly, this may highlight the difficulty of understanding and processing electronic information, associated with cashless gaming accounts.

Research relating to working memory similarly highlights that some segments in the population may experience working memory deficits. In particular, older people, people with depression and anxiety and people with psychotic disorders (e.g., Schizophrenia) have been noted to experience some difficulties with working memory. As problem gamblers may report such comorbidities (e.g., Hare, 2015; Hare, 2009), it is possible that some people with comorbidities may struggle with cashless payments and the interpretation of cashless expenditure.

In addition, segments of the community with low financial literacy and low education have been shown to experience difficulty with mental accounting (e.g., Muehlbucher and Kirchler, 2019). Given that many Australians have low financial literacy, this raises the issue of whether some people may experience issues managing cashless gaming expenditure, if they also experience difficulty with mental accounting.

Research from pre-commitment trials involving cashless gaming similarly highlight that some groups in the population may find cashless gaming either more difficult or easier to manage expenditure, relative to cash. From this perspective, it is plausible that individual differences exist amongst gamblers, although research cannot yet identify the variables involved.

In addition, while it is clear that problem gamblers have difficulty managing all forms of gambling expenditure (e.g., Schottler Consulting, 2010), it is not clear to what degree this is exacerbated by cashless gaming. Based on findings of this review, it is likely that cashless gaming may make this worse.

Together, findings of consumer literature highlight that cashless gaming is likely to have a negative effect on gamblers, when compared to using cash. However, at this stage, we cannot accurately estimate the precise extent of these effects. It is similarly unknown whether other harm-minimisation tools can mitigate these effects. This is also difficult to assess, given low gambler use of tools and given that past research has also conflated the effects of cashless gaming with other harm-minimisation tools (e.g., pre-commitment).

What can we learn about the possible harm of cashless gaming from gambling research literature?

While the consumer behaviour literature has made reasonable progress in understanding the effects of cashless payments when compared to the gambling literature, certain areas of gambling research highlight that cashless gaming may present an increased risk of harm to gamblers. In particular, Rockloff et al (2019) found that, EFTPOS use in Victoria was still associated with higher risk gambling, as was previously identified for ATMs (Thomas et al, 2013).

Accordingly, if any form of cash is available to gamblers, this may suggest it has potential to be associated with increased gambling harm. This may also be particularly true if cards hold more money than gamblers would otherwise keep in their wallet.

In Victoria, for instance, cards can hold $1000 maximum, and in Queensland and NSW, cards hold up to a maximum of $5000. This may imply that access to cash in cashless gaming could facilitate continued gambling by higher gambling risk segments. This is also a possibility, given that maximum withdrawals from EFTPOS or ATMs are much lower (e.g., single EFTPOS withdrawals have a maximum limit of $200 in Victoria and a total of $500 every 24 hours).

Indeed, just as gambling research demonstrates that access to any form of cash poses a risk to higher risk gamblers, access to greater amounts of cash on gaming cards may further heighten this risk.

Possibly the area of gambling research offering the most directly relevant insights into possible effects of cashless gaming comes from research relating to online gambling. One of the frequently reported disadvantages of online gambling, compared to land-based gambling, was that it is simply easier to spend money. This was largely attributed to the ease and swiftness of being able to repeatedly deposit money into accounts and because cashless payments ‘tokenise’ money.

In particular, Hing (2015) reported in a qualitative study, due to the use of ‘digital’ money (i.e., cashless forms of money), gamblers reported losing track of expenditure and found it easier to chase losses. This was attributed to the psychological attributes of cashless payments.

In this respect, cashless gambling money was described as merely ‘numbers on a screen’, ‘play money’ or part of a fantasy game without consequences. This was contrasted with having to take out ‘real’ money in a venue. In this respect, such research effectively implies what has been already established in consumer literature – in cashless payments, the pain of payment is far lower than the pain of payment using real money.

Tokenisation effects for money have similarly been demonstrated in other gambling research. These have shown that even use of credits, as opposed to cash, serves to ‘tokenise’ money. For this reason, authors such as Lapuz and Griffiths (2010) have explicitly recommended that gamblers use real money, rather than converting money to chips, tokens, credits or smart cards. Further supporting the need to detokenise money to avoid such effects, Loba et al (2001) found that displaying cash information helped pathological gamblers end their session sooner, compared to when credits were displayed.

Together, findings of research from such literature highlight that one of the key risks associated with gambling online involves the use of ‘cashless’ payment methods. In addition, gambling research relating to access to cash and tokenisation of money further highlight the risks of cashless gaming to consumers. From this perspective, online gambling may provide a ‘mirror’ to the many possible risks of cashless gaming using electronic payment methods.

It is noteworthy in this context that many regulators have banned credit cards being used for online gambling for this precise reason (e.g., as highlighted by Sztainert et al, 2020, who also found that credit cards were associated with gambling problems). However, it is unclear from gambling research whether debit cards or newer cashless payments (e.g., mobile payments using eWallets) have an identical effect. Based on consumer literature, it appears likely that debit cards will have a similar facilitatory effect (e.g., Runnemark et al, 2015).

If there are risks to cashless gaming, how do we best reduce these risks?

As the world rapidly moves towards increasing use of cashless payments, there is going to be increasing pressure to use cashless payment across all forms of gambling. The critical question then relates to how this transition can be best managed to minimise risk to consumers.

While research cannot directly answer this question, it highlights the need to first identify and measure the risk associated with cashless gaming in land-based gaming. Effects need to be accurately measured, as discrete from the effects of pre-commitment or other harm-minimisation tools and especially in real-world settings (rather than laboratories). Once these effects are identified and measured (if they do exist), it becomes easier to manage these from a harm-minimisation perspective.

In addition, specific effects need to be not only measured for card-based cashless gaming and TITO, but also for different methods of crediting gambling accounts. These may include debit cards, contactless mobile payments (including different methods of crediting the eWallets) and other similar payment methods.

Research from this review provides indirect guidance on some measures that may be needed to minimise harm in cashless gaming. Using consumer behaviour literature, in particular, it could be argued that methods need to be developed to make cashless payment in cashless gaming just as 'painful' as paying with cash.

Two examples from literature that offer possible avenues for exploration relate to providing messages about the 'hard work' associated with obtaining cash (e.g., Wong and Lynne, 2017) and equating cashless expenditure to items of value (e.g., Hurla et al, 2017).

While there has been a reasonable amount of research in the field of responsible gambling messaging (e.g., Gainsbury et al, 2019), this area of research has not explored the specific messages needed in cashless gaming to make gamblers experience the same 'pain of payment', as when they gamble with cash. Accordingly, this should be an area of research attention and policy development prior to introducing high ease of use cashless gaming.

As highlighted in the study of consumer use of welfare debit cards, it will be important to continue to reinforce price cues to gamblers when gambling, as evidence suggests that these may diminish when cashless payment instruments such as debit cards are used (Greenacre and Akbar, 2019).

The need to keep gamblers constantly aware of expenditure in cashless gaming is similarly highlighted through this review. In particular, a study highlighting that email transactional statements are not as effective as printed transactional statements in helping consumers manage expenditure (e.g., London School of Economics, 2015) point to the need for printed statements to be made available to gamblers (rather than cashless statements).

Pre-commitment trials showing that gamblers find it difficult to find their cashless gaming card balance when sitting at an EGM (e.g., Schottler Consulting, 2009) highlight that balances and arguably also transactional information must be available directly at the EGM. In addition, this trial also highlighted that many statements in cashless gaming systems can be very confusing to gamblers and require significant refinements in formatting and language before statements are understood.

Research showing the benefit of presenting menus for minimum payment warnings on credit cards additionally highlights the potential for annotations and online data to be prompted to make gamblers explicitly aware of their gambling expenditure (Salisbury and Zhao, 2020). For instance, there may be value in bringing to gamblers awareness that their expenditure has increased and that it would be recommended to now set a limit on their spending.

A review of international developments in cashless gaming highlight that some jurisdictions are moving towards increasing use of cashless gaming in response to COVID-19. However, in spite of such developments, jurisdictions

such as Sweden are quite concerned that this transition may be negatively impacting vulnerable members of society (e.g., the elderly and people with disabilities).

Governments of both Sweden and Finland have similarly implemented recent consumer protection measures in gambling (e.g., limits on gambling spending), given that the massive economic crisis emerging from COVID-19 is affecting so many people's mental health and overall wellbeing. Accordingly, this highlights that, in spite of the possible public health benefits of contactless payment methods, gambling generally and cashless gaming specifically may be extremely harmful for some gamblers in the community at this very challenging and unprecedented time.

Some possible vulnerabilities have also been identified in Australia, in terms of the way we use cashless payments. The Reserve Bank of Australia reported that, in 2019, 50 per cent of people 65 years and older in Australia still used cash, and that high cash users (people using more than 80 per cent cash for transactions) primarily used cash for budgeting or self-management reasons. In addition, cash is also being used by a larger percentage of people in the two lower income quartiles, when compared to the top two income quartiles.

This means that for a majority or more in these groups that use of cash is fundamental to how a large proportion of consumers manage spending.

Accordingly, such data highlights that particular care needs to be taken to ensure that vulnerable consumers do not have control over spending undermined or negatively affected by cashless gaming or by the transition to fully cashless payments.

Pressures for cashless societies coming from the COVID-19 pandemic also highlight that such risks also need to be considered from a much broader societal perspective.

As pre-commitment trials in Australia have conclusively shown that many gamblers do not opt to take up limits and related harm-minmisation tools for gambling, there is a clear need to design regulatory processes and procedures over and above pre-commitment to protect consumers from gambling harm. Indeed, while it can be claimed to have such tools available for consumer protection, they will provide no clear benefit to consumers when using cashless gaming, if such tools are not generally used. This further highlights the need for measures to better protect consumers in such circumstances.

Just as air bags in vehicles are built-in to deploy in vehicles in case of an expected vehicle crash, consumer protection measures beyond pre-commitment are arguably needed in cashless gaming to better protect consumers from harmful spending.

In this regard, some research from online gambling has highlighted the benefit of hard deposit limits in online gambling. While Gainsbury et al (2020) reported that deposits were only used by around one quarter of gamblers, they were also reported as quite effective when used. Of those using such limits, 64 per cent felt that the these had reduced their spending and 53 per cent felt that they had helped increase their control over gambling. However, given that Heirene et al (2021) also recently found that deposit limits were of limited value if they can be easily changed, the ability to easily increase or remove limits needs to be considered in this context.

Accordingly, deposit limits and total balances kept on cards may be avenues for future policy consideration (especially those hard to alter). In this context, it is particularly important to consider the intersection between existing limits on monetary withdrawals in venues (e.g., EFTPOS in Victoria, ATMs in other states) and available cashless forms of gambling. For example, it could be argued that high cashless card balances could undermine the associated harm-minimisation objectives of EFTPOS limits (i.e., allowing a card balance of $1000 is in conflict with a regulation to limit EFTPOS to $200).

Card-based pre-commitment trials in Queensland involving cashless gaming systems have identified eight structural characteristics of cashless gaming with potential to impact gambling harm during cashless gaming. These have been documented for the first time in this review and emanate from three real world pre-commitment trials involving cashless gaming.

From this perspective, these important structural characteristics and their interaction with existing consumer protection regulations warrant careful consideration prior to introducing any new cashless gaming systems in any jurisdiction (Box 1).

Box 1. Eight important structural characteristics of card-based cashless gaming systems that have potential to protect or harm gamblers, if they are inadequately designed.

1. Maximum card balance limits for cashless cards – including their intersection with other regulations designed to protect gamblers from potential harm (e.g., EFTPOS limits, ATM limits, cheques).
2. Use of cash crediting terminals and EGM-based crediting of cards as methods of allowing gamblers to place money on their cashless gaming card.
3. The maximum amount that can be transferred from cashless gaming cards to EGM credit meters.
4. How and where EGM transfer amounts can be set and changed by gamblers including protocols for increasing and decreasing credit meter transfer amounts.
5. The locations that gamblers can access the balance of their cards including the importance of being able to easily check cashless card balances at an EGM and away from the EGM.
6. The availability of salient buttons on cashless card sandwich boxes adjacent to EGMs that allow gamblers to check the balance of their cashless gaming card.
7. The format, content and overall of gambling expenditure on player activity statements.
8. Whether, how often and in what format player activity statements should be provided to gamblers to maintain their awareness of gambling expenditure.

Accordingly, optimising these characteristics has significant potential to improve the design of cashless gaming systems to minimise risks and potential harms to gamblers. It should, however, be noted that these are only based on a review of already developed systems and that future system design may have potential to further reduce harms of cashless gaming in these or other new areas.

Conclusion

In conclusion, this rapid review has identified substantial and concerning evidence that cashless gaming using monetary substitutes such as gaming cards may facilitate less controlled gambling behaviour and potentially lead to gambling harm in some consumers. It has also identified the potential for some vulnerable segments of society to be negatively impacted by cashless gaming.

This is largely attributed to research evidence that suggests that the ‘pain of payment’ in cashless payment methods is lower than when using cash.

Together, findings point to the need for further research to not only establish who is affected by cashless gaming (or whether all gamblers are affected), but to also identify how gambling may be affected by all non-cash payment methods including credit cards, debit cards and mobile payments using eWallets.

The second priority is to identify how such payments can be made closer to, or equivalent to, cash. The third priority is then to identify whether and how other harm-minimisation tools can be used to mitigate the effects of cashless gaming and associated cashless payment methods used in gambling.

Introduction

This report presents a rapid review of research literature to examine the effects of cashless gaming from a gambling harm-minimisation perspective. Cashless gaming involves the use of non-cash gaming tokens for land-based gambling. The review was prepared during late June 2020 for the Victorian Responsible Gambling Foundation.

The Foundation sought to better understand the effects of cashless gaming on gambling behaviour and harm, given the potential for cashless gaming to become more widely used across Victoria due to COVID-19. As a Foundation role is to address the determinants of problem gambling, it was considered important to understand the potential for widespread cashless gaming to present harm the Victorian community.

At the time of the review, 60 of the 492 Victorian pubs and clubs had implemented cashless gaming. This followed a recent legislative change in January 2019 to permit cashless gaming in Victorian EGM pubs and clubs.

Key objectives

Within this context, specific objectives of the rapid review were to:

1. Examine the national and international context of cashless payments
2. Explore the possible effects of cashless gaming as identified in research literature
3. Identify recent jurisdictional developments in cashless gaming due to COVID-19

Cashless gaming in Victoria

On 30 January 2019, the Gambling Amendment (Cashless Gaming) Regulations 2019 introduced new regulations allowing non-cash gaming tokens to be made available at Victorian pub and club EGM venues. Technical standards were also published by the Victorian Commission for Gambling and Liquor Regulation (VCGLR) for the operation of cashless gaming on EGMs.

Technical standards permit both ticket in ticket out (TITO) and card based cashless (CBC) gaming to be provided in Victorian EGM venues. While Crown casino also provides cashless gaming, separate legislation exists for casino operations.

TITO – In TITO, the ticket in (TI) functionality is equivalent to a player inserting cash. The ticket out (TO) functionality is equivalent to a player pressing collect and collecting credits from the EGM.

CBC – Card based gaming (CBG) gaming cards must be the same cards used for the Victorian state-wide pre-commitment and loyalty scheme associated with gaming. Cards may be casual/anonymous or registered to a player. Every card must be linked to an account or ‘cashless wallet’, each with a unique identifier.

COVID-19

This review was conducted during late June 2020 during the COVID-19 pandemic. COVID-19 is a global pandemic affecting both Victoria and Australia. As a viral, highly-contagious respiratory illness, the Novel Coronavirus, known as COVID-19 has been present in Australia since January 2020.

Given concern that handling of cash and other surfaces may spread COVID-19 (although this has not been proven), it was considered possible that gambling venues may elect or be required to switch to cashless gaming. Within this context, the Foundation wanted to gain a comprehensive understanding of research that may provide insight into the possible effects of cashless gaming, should it be more widely used in Victoria.

Types of gambling products of relevance to this review

Gambling products in scope of the current review were EGMs and gambling products in land-based venues and retail outlets (e.g., sports or race betting at the pub, keno at the club, retail lottery purchases etc.). It should also be noted that cashless gaming literature is mainly from studies examining EGMs and cashless gaming and few other land-based products have received research attention. Online gambling, however, as a product was outside the scope of this review.

In this context, while some useful research relating to online gambling is drawn upon in this review, the use of cashless payment technologies for online gambling specifically was considered outside the scope of products of interest to the review. Interactive gambling more generally, however, is acknowledged as a special topic that may also benefit from future research on payment methods and technologies.

A snapshot of cashless gaming and card regulations in Australia

Cashless gaming is also available in all states and territories of Australia. Cashless gaming permitted by jurisdictions generally includes both card-based gaming, TITO and other variants (Table 1). However, some jurisdictions have only permitted TITO in casinos (e.g., NSW, SA). Information on the rationale for the design of harm-minimisation features of cashless gaming across Australian jurisdictions is generally not published.

The amount of cash that gamblers have access to through cashless gaming (via card-based cashless gaming) varies by jurisdiction, with some jurisdictions specifying no limits and others setting very high limits (e.g., $5000 in Queensland clubs and hotels).

Table 1. Availability of cashless gaming in Australian states/territories (July, 2020) (Supplied by the Victorian Responsible Gambling Foundation)

State/ territory	Cashless gaming availability	Cashless gaming account card limits
ACT	Approved for clubs only (not in the casino)	Commissioner has powers to set the maximum card balance
NSW	Card-based approved for hotels and clubs. TITO approved for casino and standalone EGMs at hotels and clubs	$5000
NT	Approved for hotels, clubs and casinos	Requires approval, but no value stated
QLD	Approved for hotels, clubs and casinos. Card-based no longer requires pre-commitment functionality	$5000 hotels/clubs $9999.99 casinos
SA	Approved for hotels, clubs and casinos. TITO approved for premium areas of casino	Commissioner has powers to prescribe a maximum balance
TAS	Approved for casinos	No reference in casino legislation
VIC	Approved for hotels, clubs and the casino	$1000
WA	Approved for casino. N/A for hotels and clubs	No reference in casino legislation

Methodology for rapid review

As there is very limited research on the topic of of cashless gaming, the aim of the current review was to identify relevant sources of scholarly literature, with potential to inform of the effects of cashless gaming, rather than to conduct a systematic review of literature only on the topic of 'cashless gaming' (i.e., this literature is currently too limited to permit a systematic review or meta-analysis).

For this reason, the review involved searches of scholarly journals and grey literature to identify literature of potential relevance to cashless gaming. In addition, searches were repeated in Google Scholar and in Google generally to ensure a comprehensive search process. Databases searched included DeepDyve, APA PsycNet (which links to over 4.8 million records), Jstor.org, Pubmed and the Social Science Research Network.

In most cases, searches were for papers and information from 2004, as this was the year cashless gaming emerged in Australian research literature (based on the work of Nisbet in 2004). However, a number of earlier papers were also incorporated into the review. In relation to recent grey literature on consumer payment use in Australia, and similar topics, the most recent research was identified to ensure that the latest research could be incorporated into the review.

Searches in scholarly databases included use of search terms such as cashless gam*, cashless, payment method, payment instrument, electronic payment, digital payment, card-based gaming, ticket in ticket out, mobile payment, consumer spending, consumer payments, along with general searches for literature that may guide investigation of the effects of cashless gaming (e.g., access to cash gambling, tokenisation of gambling, online gambling, gambling payment, cash gambling etc.). Some literature on working memory and mental accounting was also examined, given its potential to help clarify the effects of cashless gaming.

In addition, major topics and abstracts of journals in field of gambling research were examined to assess whether any additional topics may shed light on the impacts of cashless gaming. This included the Journal of Gambling Research, Journal of Gambling Studies, International Gambling Studies, Journal of Gambling Issues, National Association of Gambling Studies conference research abstracts and the like. Research repositories relating to gambling research were similarly scanned for potentially relevant insights including the Victorian Responsible Gambling Foundation research library, Gambling Research Exchange Ontario (GREO) and research reports from Gambling Research Australia.

A breakdown of the types of literature incorporated into the rapid review by year is below. A total of 137 papers were included in the review. A total of 80 papers were from 2016 or later, 21 papers were from 2010-2015 and 36 papers were from earlier than 2010.

Year of papers	N	%
Earlier than 2010	36	26
2010-2015	21	15
2016 and onwards	80	58
Total	**137**	**100**

Structure of the current review

While cashless gaming has been present in many EGM venues across Australia for many years, there has been surprisingly very limited research on the effects of cashless gaming on gambler behaviour and gambling harm. From this perspective, the current rapid review attempts to distill related bodies of research that may provide insight into the possible risks and harms of cashless gaming. A discussion section is also prepared to discuss overall observations from this literature (Refer 'Discussion of findings – What does this tell us about cashless gaming?).

This review aims to achieve this objective by examining literature and research as follows:

- **Section 1. The national and international context of cashless payments** – As it is well-known that both Australia and most other countries across the world are increasingly moving to cashless payment systems, this section sets the context for the review by briefly examining the transition of both Australia and other countries towards cashless payment technologies. This explores key drivers of the transition and associated costs and benefits. In addition, use of cashless payments in a globally leading cashless economy, Sweden, is also briefly examined.
- **Section 2. What does consumer behaviour and related literature tell us about cashless payments?** – Given the very few studies on cashless gaming available in gambling research literature, this section examines consumer behaviour and related literature (e.g., cognitive psychology literature) to explore possible effects of cashless gaming. Literature highlighting specific trends in the use of cashless payments in Australia are also examined from the most recent Consumer Payments Survey (RBA, 2020).
- **Section 3. What does the gambling research literature tell us about cashless gaming?** – This section examines studies specifically conducted on cashless gaming to identify its possible effects from a gambling harm-minimisation perspective. Findings of Australian pre-commitment trials that have included a component of cashless gaming are also reviewed, along with literature from other areas of gambling research. This latter literature aims to explore possible effects of cashless gaming by drawing on research in a number of related fields (e.g., research on access to cash in gambling, research on online gambling).
- **Section 4. Recent jurisdictional developments in cashless gaming regulatio**n – This section summarises recent international developments in the regulation of cashless gaming in three major jurisdictions (the US, Sweden and the UK) and also briefly examines other literature highlighting the role that COVID-19 may play in increasing the adoption of cashless payment technologies and cashless gaming.

SECTION 1.
THE NATIONAL AND INTERNATIONAL CONTEXT OF CASHLESS PAYMENTS

Global developments in cashless payments

Global movement towards cashless societies

With new payment technologies rapidly evolving, many countries around the world are steadily moving towards becoming cashless, or near-cashless, societies. It is clear that key factors contributing to this shift vary from country to country and depend on the complex interaction of laws, politics, business interests, technologies, and similar factors (Arvidsson, 2019).

Although it is difficult to pinpoint which factors are the most important determinants of the transition to a cashless society, a major driver affecting the speed at which countries move towards becoming cashless relates to government regulations to limit use of cash within society. This has in part occurred to combat the black economy in some jurisdictions.

For instance, in May 2016, the European Central Bank announced that the issue of the very large Euro 500 banknote would be discontinued (a note of value to black markets). In November 2016, the government of India announced the drastic step of demonitising the two most popular denominations, the 500 Rupee and the 1000 Rupee notes (Krueger & Seitz, 2018). Several central banks around the world, including in Sweden, are similarly investigating the introduction of digital currencies (Riksbank, 2018).

Together, such developments illustrate that the world is moving towards increasing use of cashless payment methods and that many factors are driving this trend.

Convenience and cost of cashless payments as main drivers

While many factors contribute to the use of cashless payments throughout society, convenience and cost reduction are argued by Almeida et al (2018) as the most critical overall drivers for the commercial sector. The introduction of mobile payment and digital wallet systems - such as Apple Pay, Google Pay, Alipay and WeChat - are examples of payment solutions that provide increasing convenience to consumers (Australian Payments Nework & AT Kearney, 2018).

Such mobile applications store electronic representations of payment cards that can be used to make contactless payments at points-of-sale using Near Field Communication (NFC) or Quick Response (QR) codes. This technology enables person-to-business and person-to-person money transfers (RBA, 2020). It has also created a shift towards ‘context-based’ payments, where payments are incidental or invisible to consumers.

An emerging example of this type of payment innovation is found at Amazon (ATKearney & Australian Payments, 2018). The company provides physical dash buttons to attach to products (e.g., a washing machine), allowing consumers to simply ‘press a button’ when they want to make a purchase (e.g., washing powder). This triggers an invisible payment using stored credentials.

Trends in Sweden towards becoming a fully cashless society

Sweden is regarded as a world leader in the global race to become a cashless society. Swedish society has changed profoundly in the past decade due to attempts to replace all cash with digital payment methods (Arvidsson, 2019). Sweden’s central bank, Riksbank, reported that in 2018, only 13 per cent of consumers paid for their last transaction in cash (Riksbank, 2018). Many banks also no longer offer cash services and many stores and cafes will not accept cash.

Many factors have contributed to Sweden becoming a near cashless society and some relate to the country's legal and policy frameworks. One fundamental factor that differentiates Sweden from other countries is the legal constitution that actually allows a merchant to say: *I do not accept cash*. This is one important reason why the use of cash is decreasing rapidly (Arvidsson, 2019). Other interesting developments are described in Box 2.

Box 2. Factors influencing the Sweden's transition to becoming a fully cashless society

The Riksbank in Sweden contributed to the shift by eliminating the country's highest denomination bill in 1991. The Government of Sweden stated that access to cash should be provided to all in society, but it is only the responsibility of Government to provide services if there is market failure (Ministry of Finance, Sweden, 2016).

In this context, the main role of the Government of Sweden and the Riksbank is to oversee that payment technologies are provided by the market. This has encouraged many different cashless payment services to be developed in Sweden and has decreased the country's reliance on cash (Arvidsson, 2019).

Arvidsson (2019) reported that changes in the Swedish tax system additionally contributed to the reduction in cash transactions. Incentives were introduced to reduce the use of 'black money' in the construction and household services sectors. Private individuals could obtain tax reductions, if they paid construction and/or household services using cashless payment methods.

This meant that cash payments were replaced by invoices, which reduced the incentive to not pay tax. New tax laws similarly imposed restrictions to prevent manipulation of cash registers, which led to merchants gradually reducing their acceptance of cash in preference for card payments.

A further factor likely to push Sweden further towards becoming a fully cashless society is the possible introduction of a new digital currency. Sweden's central bank commenced a project in 2017 to examine the possibility of introducing a central bank digital currency (CBDC) called the e-krona. An e-krona would give the general public access to a digital complement of cash, where the state would guarantee the value of the money (Riksbank, 2018).

Another important factor related to the rapid advancement in payment technologies. In 2012, Sweden began moving toward digital payment applications when it launched Swish, a government-backed app that links an individual's phone number to their bank account (Arvidsson, 2019). This enables instant mobile transfers of money from person-to-person or from person-to-business.

Riksbank reports that use of Swish has increased very rapidly in recent years (Riksbank, 2018). Results of surveys conducted by Riksbank revealed that, in 2014, around 10 per cent of respondents had used Swish during the past month, and in 2018, this figure had jumped to 60 per cent (Riksbank, 2018).

Advancements in technology have also led to the development of microchips in Sweden, which are implanted under human skin to replace the need to carry around passes, keys and credit cards (Rothschild, 2020). Sweden's largest train company has started to allow commuters to use these instead of tickets, eliminating the need for cash or cards.

Given these many developments, Arvidsson et al (2018) predicted that around one quarter of merchants will stop accepting cash in the country by 2020 and another one quarter will cease by 2025.

When Australia may become a cashless society

As in Sweden, Australia is rapidly moving towards becoming a fully cashless or near cashless society. The country is ranked the sixth most cashless society in the world, based on the number of electronic payments per year in 2019 (Yee, 2019).

According to the Reserve Bank of Australia (RBA) 2019 Consumer Payments Survey (RBA, 2020), Australians are increasingly preferring to use electronic payment methods, with just 27 per cent of all consumer payments made with cash, compared with 37 per cent in 2016 and 69 per cent in 2007. Australia's growth in digital payments is reported to be enabled by a high number of point-of-sale (POS) devices across the country.

RBA statistics also highlight that the average Australian makes 500+ electronic payments a year (RBA, 2020). Global firm, Research and Markets (2018), predicted that Australia could become the Asia-Pacific's first cashless society by 2022.

The Commonwealth Bank, however, predicts that this is more likely to happen by 2026 (Yee, 2019).

The RBA 2019 survey showed that debit and credit cards combined are the most frequently used payment methods in Australia, with card payments now representing about three quarters of the total number of non-cash retail payments. The convenience of using cards for payments has been enhanced over recent years by the widespread adoption of contactless 'tap-and-go' functionality at merchants, which has resulted in increased use of cards for low-value purchases.

As the digital economy continues to gather pace, demand for ATMs has also been shown to be reducing. The RBA's Payment Systems Board 2019 Annual Report stated that the total number of ATMs in Australia had declined by 12.5 per cent (about 4,100 machines) since the peak in 2016.

Industry-wide figures additionally show that, in the year to September 2018, the total number of ATMs around the country fell by almost 2000, or six per cent, to 30,219 (ATKearney & Australian Payments Network, 2018). Usage had fallen significantly too, with data from the RBA showing that the number of transactions declined three per cent in the year to January 2019 (RBA, 2020). In the past decade, it is also noteworthy that transaction numbers have fallen more than 35 per cent.

Factors contributing to the reduction of cash payments in Australia

The reduced use of cash for transactions in Australia over the past decade largely reflects consumers preferring to use debit and credit cards for in-person payments, including for many low value payments.

In particular, the RBA 2019 Consumer Payments Survey revealed that overall, 83 per cent of point-of-sale card transactions were contactless, initiated by tapping a card or mobile device. Growth in e-commerce has also played a role, as these transactions require an electronic payment method.

Strong growth in card payments has also been driven by the rising popularity of debit cards. According to the RBA Payments System Board Annual Report (2019), the number of debit card transactions grew at an average annual rate of 14 per cent over the past decade, compared to a rate of seven per cent for credit cards.

Growth in the value of debit card payments also exceeded that for credit cards. Consequently, over the past decade, debit cards rose from a third to one-half of the total value of card transactions. There are now around 43 million debit cards on issue in Australia, compared with 21 million credit cards.

Another contributing factor to the Australian use of cashless payments is the introduction of the New Payments Platform (NPP) in early 2018 (ATKearney & Australian Payments Network, 2018). This facilitates real-time payments between entities making and receiving payments. This has been a major upgrade to Australia's retail payments infrastructure.

Consumer demand for convenience has also supported strong growth in 'remote transactions' over recent years. Remote transactions are online payments and payments made through mobile apps (e.g., ride-sharing or meal delivery apps). According to the RBA Payments System Board Annual Report (2019), remote transactions accounted for 16 per cent of the number of all card purchases in June 2019, compared with only 12 per cent five years earlier.

The RBA similarly predicted that the launch of mobile payment platforms, or 'digital wallets', such as those offered by Apple, Google and Samsung, may further accelerate the move towards a cashless economy.

Data from the Roy Morgan Digital Payments Report from May 2020 shows a sharp increase in use of non-bank contactless mobile payment services compared to the year prior. A total of 10.8 per cent of Australians now use non-bank contactless mobile payment services such as Apple Pay and Google Pay, up from 7.1 per cent a year ago.

Possible effects of COVID on the use of electronic payments

Given that COVID-19 has only just recently occurred, there has been limited discussion about how the pandemic is likely to affect the transition of Australia towards a cashless society.

However, some interesting thoughts have been shared by RBA staff in a conference speech in June 2020. The RBA Assistant Governor, Michele Bullock, stated that the long-term decline of cash has been accelerated by merchants and consumers concerned about hygiene during the COVID-19 pandemic, with many putting up signs asking for card payments or rejecting cash altogether.

Bullock additionally stated that payment providers facilitated these moves by temporarily raising the transaction limit, below which a PIN is not required for a contactless card payment from $100 to $200. Banks promoted mobile payments, which often do not require PINs, even for large purchases. Banks were also reported to obtain dispensation to mail out debit cards to a large number of customers without such cards.

Bullock reported a view that such changes are likely to result in permanent shifts in consumer behaviour. Consumers who have recently obtained a debit card now have an ability to use their card at points of sale and for online purchases.

Bullock similarly commented that the increased use of online shopping, during the COVID-19 'stay at home' period, may have led to a permanent shift in consumer behaviour, and that many retailers have increased their online offerings as a result.

Bullock indicated that ATM withdrawals in April 2020 were down 30 per cent from the month prior and were more than 40 per cent lower than the year before. This was also described as likely to lead banks to reduce ATMs.

At the November 2018 Australian Payments Summit, RBA Governor Dr Philip Lowe stated that the average cost of cash transactions is likely to rise, as the volume of cash transactions falls. This means that, in time, it may no longer be profitable for retailers to accept cash.

According to a 2019 Commonwealth Bank white paper, Sweden and China have demonstrated that falling cash acceptance by merchants and retailers is more likely to drive the death of cash than government mandates (Yee, 2019).

Global Data (2020) additionally predicted that, in Australia, new Open Banking legislation may eventually make many more alternative digital payment methods available to the average consumer. Deloitte Access Economics (2019) reported that Open Banking *'gives consumers the power to securely share their selected banking data with accredited third parties. Open Banking lays the foundation to improve consumer experience and create new products and services, and change the competitive landscape'* (DAE web site, 2020).

Other advantages and disadvantages of a cashless society

A range of authors have identified a number of other advantages and disadvantages of a cashless society (Box 3 and Box 4). Most notably, one reported disadvantage related to a concern that vulnerable members of society may be adversely affected by the rapid transition to cashless payments (Arvidsson, 2019).

Box 3. Advantages of cashless societies identified in literature

- Ramya et al (2017) – The convenience and ease of conducting financial transactions
- Ayoola (2013) – The elimination of counterfeit money, theft of cash by employees, and cash burglaries
- Kaur (2019) and Schneider (2017) – Reduction in black market activity such as money laundering, tax evasion and illegal transactions. Funding illegal activity is also more difficult in a cashless society.
- Australian Treasury (2019) – The Australian Government introduced the Currency (Restrictions on the Use of Cash) Bill 2019 in September 2019 which, once passed, will make cash transactions of more than $10,000 illegal. The Bill has been introduced to reduce illegal activities (e.g., tax evasion)
- Kaur (2019) – Reduction of costs associated with printing and maintaining physical currency, better hygiene from non-use of cash and electronic transactions provide improved payment transparency and accountability in society.

Box 4. Disadvantages of cashless societies identified in literature

- Arvidsson (2019) – The author reported that a parliamentary review is taking place in Sweden due to concerns that the move to a cashless society is happening too rapidly and is adversely affecting vulnerable members of society. These include the elderly, people with disabilities, people who are homeless and people in rural areas.
- Sater (2019) – The author argued that a cashless society allows for an increased level of government surveillance. China's social credit system was cited as an example of where privacy has been undermined. This was created in collaboration with Alibaba Group and gives a score to each of its citizens, tracking their movements, friendships, romantic relationships, health records, reading habits, shopping behaviours, and, financial status. Information on the consumer's financial status is tracked by extracting information from digital payments.
- Fabris (2019) – The author reported that a cashless society is vulnerable when internet and banking systems fail. For example, a technical error in Australia in 2019 saw ATMs and EFTPOS machines unable to accept payment or distribute cash (Cooke & Chrysanthos, 2019).
- Rivera (2019) – The author identified that that a cashless society faces an increased risk of underground financing through the 'Hawala system'. For instance, Tade and Adeniyi (2020) reported that an outcome of the cashless policy in Nigeria has been electronic banking fraud.
- Ramya et al (2017) – Argued that a cashless society presents an increased risk of online fraud and identity theft.

Together, a brief review of national and international developments in cashless technologies highlight that many countries – including Australia – are rapidly moving towards becoming cashless societies and many factors are driving this trend. While there are many noted advantages and disadvantages of cashless payment technologies for society, it is noteworthy that some major risks are also apparent. Within this context, it is important to understand how cashless payments affect consumers to both ensure that risks are managed and that strategies can be developed to protect consumers.

What does this tell us?

In summary, research highlights that:

- Many countries are rapidly transitioning to become cashless societies – This has been predicted to occur in Australia around 2022 to 2026
- Consumer convenience and the lower cost of cashless payments are major drivers of the transition away from cash
- ATMs are rapidly reducing in number as Australians reduce their use of cash
- New Open Banking legislation that allows users to share banking data with third parties, is expected to lead to growth in the availability of cashless payment methods
- While there are many benefits of cashless societies, leading countries such as Sweden are starting to express concern that the transition to cashless payments is negatively affecting vulnerable members of society
- There is some speculation that COVID-19 may have resulted in permanent changes in consumer payment behaviour and use of cash.

SECTION 2.
WHAT DOES CONSUMER BEHAVIOUR AND RELATED LITERATURE TELL US ABOUT CASHLESS PAYMENTS?

What do we know about the use of cash and cashless payments in Australia?

In spite of the importance of protecting consumers, relatively little research has examined how the psychology of money and monetary payments has changed since the progressive phasing out of cash from Australian society. This presents an interesting research question, given the decline in the use of cash in Australia from 1969 to present times (Box 5).

Given the decreasing use of cash, it is plausible that new payment methods are impacting consumer behaviour, which raises questions about how this may be occurring and the psychological and cognitive mechanisms underpinning such changes.

Box 5. Australia's transition away from cash – psychological impacts of such changes have had relatively little research

1969 – Australia's first ATM was installed by the Commercial Banking Company of Sydney. A customer entered a six digit number and $25 maximum was dispensed. The card was then sent back to customers through regular mail

1975 – Arrival of Bankcard, Australia's first credit card. Food retailers only accepted cash, so cash was essential for everyday purchases

1977 – Computised ATMs were first introduced into Australia, with the very first ATM in Brisbane

1980 – The Commonwealth Bank and the Bank of New South Wales began installing ATMs in 1980, with machines operational only on limited hours (7am to 11pm)

1980s-1990 – ATMs installed across Australia as all banks moved to electronic banking

2011 - Google Wallet was introduced as company's first mobile payment system (developed for Android devices in 2011). In 2015, it was renamed Android Pay, with Google Wallet refocused to strictly peer-to-peer (P2P) payments.

2014 – During October apple launched Apple Pay

2016 – In July 2016, Android Pay was operational in over 52 banks to bring easy contactless payment to Australians

By 2017 – ATM numbers were declining, as 'Tap and Go' cards were increasingly replacing cash.

Within this context, the current section of the review presents a critical analysis of consumer behaviour literature that may directly or indirectly relate to impacts of changing payment methods in Australia.

As this topic has not been well-researched, a range of different types of literature in the consumer behaviour and cognitive psychology fields are drawn upon to identify possible implications for the decreasing use of cash in Australian society.

Such literatures provide useful contextual information into possible issues that may affect the use of cash or cashless methods in gaming and gambling in Victoria.

What changes have occurred in the use of cash in Australian society?

The first question that provides insight into possible impacts of declining use of cash relates to historical changes in the use of cash in Australian society. The Reserve Bank of Australia Consumer Payments Survey (CPS) (2019) highlights an overall decline in the transactional use of cash in Australian society (RBA, 2020).

This is also the most recent and largest study examining consumer use of cash in Australia. The survey is robust and includes a pre-diary questionnaire, a seven-day payments diary and a post-survey questionnaire examining respondent payment preferences and attitudes. While data is primary collected online, the study includes recruitment of participants without internet access via phone to ensure a representative sample.

The Consumer Payments Survey (2019) highlights that cash use in Australia is on the sharp decline. In 2019, only 27 per cent of consumer payments were made with cash and this was a decline of 42 percentage points since 2007 (where 69 per cent of the community used cash).

It is noteworthy that the 2019 CPS reported that around a third of Australian consumers do not use cash at all in a typical week and a quarter held no cash in their wallet (compared to eight per cent in 2013). This highlights that cash use is rapidly declining in Australia and a large proportion of Australians are happy not to use cash at all.

Why do consumers use cash in Australia?

Reasons consumers report using cash provide indirect insight into psychological aspects of cash use. Respondents in the survey (RBA, 2020) were segmented into Low and High cash users. Low cash users were consumers using less than 20 per cent cash, while High cash users were those using 80 per cent or more.

While specific percentages are not yet available for the 2019 survey (only graphs without values are available until late 2020), the top reasons the Low cash group used cash were for merchant acceptance (estimated at between 45-50 per cent), for small transactions (estimated at around 15 per cent) and to avoid card surcharges (estimated at just under 10 per cent).

In comparison, reasons for cash use were quite different for High cash users. They included use of cash for budgeting/a preference to use their own funds (estimated between 45 and 50 per cent), for small transactions (estimated at around 15 per cent) and for fraud or privacy concerns (estimated at just under 10 per cent).

Accordingly, the key difference between groups related to use of cash for budgeting or money management reasons. This was substantially higher for the High cash user group, estimated 45–50 per cent, compared to only around five per cent for the Low cash user group.

A further interesting insight relates to the tendency for consumers to hold cash in and outside a wallet. Consumers reported holding only $45 cash in their wallet (the median value in 2019) and nearly 40 per cent reported holding cash outside their wallet (e.g., a ‘stash’ of cash at home).

The top three reasons for this latter result were largely ‘precautionary’ reasons – namely, for emergency transactions, for budgeting and to avoid unnecessary withdrawal time, fees and access.

The survey similarly reported that cash transactions in Australia were being more frequently used for smaller than larger transactions, with the highest proportion in 2019 being used to make purchases under $10.

How often do consumers use ATMs and EFTPOS to access cash?

Consumer use of different sources of cash provides insight into where consumers are accessing cash in the Australian community. While 2019 survey results were not available, the 2016 survey revealed a number of indicative trends.

In 2016, consumers made a mean of 0.4 ATM transactions per week, compared to 0.9 in 2007. In addition, while 86% of survey respondents reported accessing any form of 'cash top-up' in the 2007 survey week, the same figure was substantially lower in 2016 at only 45% of respondents.

Obtaining cash through point-of-sale EFTPOS followed a similar trend (0.1 in 2016 compared to 0.3 in 2007). Interestingly, however, the amount of cash accessed changed very little from 2007 to 2016 ($100 via ATM in both 2007 and 2016). While specific reasons are unclear, this may be due to the use of cash for small purchases or possibly because having cash provides some consumers with a level of psychological reassurance.

What are the demographics of Australian cash users?

The most recent Consumer Payments Survey (RBA, 2020) provides insight into the demographics of consumers using cash in Australia in 2019. Not surprisingly, cash is used by a higher percentage of consumers in older age groups, with cash use estimated at 50 per cent for people 65 or older. In comparison, cash use is estimated at just over 30 per cent for people 50-64, at just over 20 per cent for people 40-49 years and around 10 per cent each for people 18-29 years and 30-39 years.

While data is not published for the 2019 survey, the 2016 Consumer Payments Survey (RBA, 2017) highlighted that regional consumers may rely more heavily on cash than metropolitan consumers, with respectively 44 and 34 per cent of their payments being made with cash.

When income is considered, cash was also reported to be used by a higher percentage of people in the two lower income quartiles (compared to the two higher quartiles). Although the difference between these was still only an estimated 15 per cent.

Do consumers use cash in bars and clubs in Australia?

The 2016 Consumer Payments Survey (RBA, 2017) provided insight into the percentage of transactions being used by consumers at different merchants in Australia. Of relevance to use of cash at gaming venues, the use of cash at pubs and bars was measured in the 2016 survey.

Of the 37 per cent of respondents reporting use of cash in 2016, 58 per cent reported use of cash at pubs or bars. However, it was unclear whether this related to only food or whether all services were included (including gambling).

Relative to other merchants, cash was used at pubs and bars for a higher percentage of transactions. The only other merchant type where cash was used by a higher percentage of consumers was at small food stores.

What do we know about use of cashless payment methods in Australia?

The Consumer Payments Survey in 2019 additionally provides insight into the use of cashless payment methods in Australia for payment transactions (RBA, 2020). Results showed that cards (debit and credit cards) accounted for 63 per cent of all consumer payments in 2019, with debit cards used much more frequently than credit cards (44 per cent for debit cards and 19 per cent for credit cards).

The survey interestingly found an increase in the use of debit cards across all ages between 2016 and 2019. In addition, younger people were found to use debit cards most frequently, with people under 40 using these for around two thirds of their in-person payments (compared to 36 per cent for consumers in older age groups).

Given the possible linkage to consumers visiting gambling venues, it is of interest to understand how often debit and credit cards are used at pubs and bars. According to data from the 2016 Consumer Payments Survey (RBA, 2017), 25 per cent of payments at pubs or bars were via debit card and 18 per cent were via credit card, further highlighting the high use of cash at such outlets during 2016.

It should be considered, however, that while this is the most recent available data, results may be quite different in 2020.

The most recent survey also reported trends for people using 'contactless' mobile payments (RBA, 2020). Data indicated that use of mobiles as a payment method is rapidly growing in Australia. In 2019, around 10 per cent of payments were made using mobile 'tap and go' payments and this was over twice the amount in 2016.

The study showed that increases were largely due to higher usage of such payments by people under 40, with almost one in five making at least one contactless mobile payment in the week of the 2019 survey.

Reasons why consumers had not adopted mobile payments were also probed. Just over half of respondents indicated that this was because they were satisfied with current payments methods and a further 30 per cent reported that they did not like the idea of making a payment via mobile.

In addition, it is noteworthy that around 20 per cent were unsure whether their mobile was capable of such payments (although 80 per cent reported owning a smartphone).

Such insights may highlight that, while mobile payments are likely to be more acceptable to younger people, knowledge and familiarity with smart phone technology may affect adoption of mobile payments.

What do we know about use of online payments and automated payments in Australia?

Trends for 'online payments' are also available in the 2019 Consumer Payment Survey. Online payments include all types of cashless payments – namely, mobiles, debit cards, credit cards and internet banking.

The survey showed that the popularity of online payments has increased substantially since 2007, with now around 55 per cent of consumers reporting at least one online transaction in the week of the 2019 survey, which was double the trend in 2007.

A trend for automation in payments also further highlights community preferences for payment ease. These are not included in the definition of 'online payments' and include only automatic bill payments and subscriptions.

In 2019, automatic payments accounted for around nine per cent of transactions and around one fifth of weekly spending. In addition, around half of all household bill payments in 2019 were automatic and this was more than double the share in 2013.

What does this tell us?

In summary, research highlights that:

- Cash use is declining in Australia, with only 27 per cent of consumer payments made with cash in 2019. ATM use is also declining.
- The main reasons consumers use cash are for budgeting, small transactions and out of fraud or privacy concerns.
- Cash is used by a higher proportion of older people – Around half of all consumers 65 years and older use cash.
- Cash is also used by a higher proportion of people in the bottom two income quartiles.
- Debit cards were the most common cashless payment method in 2019 – 44 per cent of Australian consumers used debit cards and 19 per cent used credit cards.
- In 2019, around 10 per cent of payments were made using mobile ‘tap and go’ payments and this was over twice the amount in 2016 – people under 40 are driving this uptake.

How might cash be cognitively different from cashless payment methods?

How paper versus electronic bank statements may be cognitively different

While handling cash may give consumers an immediate feel for how much money they have available for spending, it remains unclear how cashless payment methods are cognitively or psychologically different from using cash. As this has not been well-researched, research literature from a range of fields may shed indirect light on possible cognitive differences between these payment methods.

In particular, a study by London Economics (2015) highlighted that consumers receiving financial bank statement information in an electronic format had greater difficulty interpreting the information, compared to consumers receiving it in a paper format.

While not a direct reference to cashless payments, it bears some anologies to the comparison between cash and cashless methods. In cashless payments, consumers receive less direct information on their spending and must check accounts and balances to remain aware of expenditure.

The London Economics study (2015) involved a type of 'experiment', where bank statements were sent to consumers in either an online or paper format. Online statements are relevant to debit and credit cards, where consumers must log on to an account to become aware of expenditure.

In the study, 3600 consumers were invited to take part. A behavioural experiment was conducted where consumers were asked to recall bank statement content, with a cash prize draw as the participation incentive. Half the sample was sent an online statement, while the other half was sent the statement by mail. Respondents in each group were then asked to complete a survey to assess their perceptions of the experience (with 2399 surveys received).

Findings showed a distinct advantage of the paper over the online bank statement. Around 82 per cent of consumers receiving the statement by post were able to correctly recall the required content, compared to only 32 per cent being sent the electronic statement. Around 71 per cent receiving the paper statement were also able to recall the value of the largest account payment, versus only 30 per cent of the group receiving the electronic statement.

Other results reinforced this same overall trend. Consumers receiving the electronic statement performed noticeably worse in assessing the financial health of their accounts and in working out whether there was enough money to pay a bill on a certain date.

Results of this study have been used by some social advocacy organisations to emphasise the need for banks to continue to offer paper statements, given that consumers with paper statements may be better able to make informed decisions about financial matters (Refer www.keepmeposted.org.au). In particular, Keep Me Posted Australia (KMP) is a campaign advocating that every Australian should have a right to choose paper statements for bank, utility and similar accounts, without the impost of having to pay a fee.

Further evidence from the attitudinal survey of online respondents also highlighted drawbacks of online accounts. In particular, while 84 per cent believed that they kept a close watch on their financial affairs, 34 per cent reported that their bank account was overdrawn at least some of the time. The two top reasons for this were reported to be

because consumers lost track of money in their account (38 per cent) or forgot that payments were due to come out (37 per cent).

Together, such findings may suggest that online financial information from cashless accounts may be cognitively more complex to process than financial information in paper formats. Accordingly, this may have relevance to the use of cash more generally and particularly, in relation to the use of cash in the context of gambling and gaming.

While this has not been well-researched, it raises question about whether managing money using cash is cognitively and psychologically different from managing money using cashless payment methods.

Cognitive impact of Minimum Payment Warnings (MPW) on credit cards

A further recent US study highlighting a similar effect was undertaken by Salisbury and Zhao (2020). The authors proposed that Minimum Payment Warnings (MPW) disclosures on credit cards were not salient to many consumers and were rarely viewed when making repayments online. These were referred to by the authors as 'open choice' formats.

It was reported that many payment warnings were being used by banks for online statements in spite of the fact they were originally only designed for paper. In comparison, 'active choice formats' or online tools to help people make informed decisions about payments were proposed to be a superior way of providing information.

In active choice formats, full statement balance payment options and minimum required payment options are explicitly provided through a menu (e.g., an online drop down menu), in addition to being on the statement.

An experimental study was conducted by the authors to test active choice formats. Findings were as expected. Compared to an open choice format (where warnings are buried in an electronic version of a statement), active choice formats were found to increase the probability of consumers correctly paying the minimum required amounts and full balance statement (i.e., so that the entire debt could be paid off).

Total payments were also higher in the group exposed to the active choice format. It was noteworthy that financially vulnerable customers benefitted from active choice formats. The authors then argued that this was largely because the active choice format made payment amounts more salient and that similar methods (e.g., bold fonts, bright colours) could be used to improve information salience and to 'nudge' consumers towards certain amounts.

Such findings raise the possibility that cashless payment methods may be improved through use of active choice formats and particularly, where menus and prompting techniques are used to raise awareness of expenditure. In the context of gambling and gaming, this raises the need to ensure that menu systems in cashless software are user-tested and well-designed to ensure that consumers are empowered to make well-informed decisions about expenditure.

Are cashless payments too cognitively complex for consumers?

In spite of increasing use of cashless payments in Australia, the previous findings may suggest that some aspects of cashless payments may be cognitively too complex for some consumers. This raises the question about why this may be the case. While no specific research has explored this exact topic, research in the field of cognitive psychology may provide insight into why cashless payment methods might present cognitive challenges.

Baddeley and Hitch (1974) conducted pioneering work to identify the concept of 'working memory' and its role in human information processing. According to the authors, working memory is a system with limits on both its storage and processing capabilities. Visual, auditory and sensory information is processed in working memory.

Baddeley's model (Baddeley et al, 2009, 2012) describes three main functional components of working memory: the phonological loop, the visual sketchpad, and the central executive. Each interacts with long-term memory in the episodic buffer to process information for long term storage.

Each component is activated when information is presented for learning. The mind is kept aware of auditory information through the phonological loop, the visual sketchpad allows processing of visual images and spatial information and the central executive allocates cognitive resources to focus attention for problem solving. It also prevents inference from unnecessary information (Baddeley, 2012; Baddeley, Eysenck, & Anderson, 2009).

Working memory has been identified as a critical cognitive component in learning and deficits have been found to be associated with learning difficulties (Holdnack, 2019). In addition, research shows that some groups in the population may experience difficulties with working memory.

In turn, this raises the potential for certain segments in the population to experience difficulties with payment methods that require processing of complex cognitive information in working memory.

Gold et al (2019) found working memory and attention deficits in subjects with psychological disorders. Subjects had bipolar disorder with psychotic episodes, schizoaffective disorder and schizophrenia.

A range of cognitive deficits including working memory impairments were similarly found to be associated with anxiety disorder in a recent meta-analysis by Moran (2016). This research reviewed 177 samples examining working memory and anxiety and found that self-reported anxiety was significantly related to poorer performance of working memory (even including where anxiety was experimentally induced).

Deficits in certain components of working memory were also identified by Li et al (2018) in subjects with major depressive disorder. Highlighting the potential for declines in working memory in older adults, Jaroslawska & Rhodes (2019) found in a meta-analytical review that older adults had a lower ability to store information over brief intervals. This itself is interesting, as it may in part account for why some older consumers have a preference for handling cash.

Together, such findings may suggest that certain groups in the population may potentially experience working memory deficits across all types of information. This raises the possibility that deficits may be exacerbated with payment systems that require users to regularly access monetary information from working memory.

Within this context, the parallels to cashless payment methods are clear. While they are currently a major part of Australian society and increasing in prevalence, it is plausible that cashless payment methods have potential to differentially impact certain groups in the population.

What does mental accounting literature tell us about how consumers cognitively organise expenditure information?

Cognitive processes involving thinking, organising and evaluating information have been referred to in literature as mental accounting (Thaler, 1980). Literature on mental accounting has some potential to shed light on the way consumers cognitively structure expenditure information when making payments (including when using both cash and cashless payments).

The theory of mental accounting proposes that consumers assign 'labels' to sources and uses of money and track expenses using a mental accounting system (Henderson and Peterson, 1992; Thaler, 1980).

Mental accounting processes are proposed to serve three main purposes – they help simplify decisions, maintain self-control and maximise pleasure from consumer decisions (Antonides and Ranyard, 2017; Zhang and Sussman,

2018). An an example of mental accounting, consumers may label expenditure in different categories such as money for ‘leisure’, ‘groceries’ and ‘rent’.

While there hasn’t been any research directly investigating differences in mental accounting for cash versus cashless payment methods, some research provides indirect insights into the types of payments that may increase the difficulty of mental accounting.

In particular, research has identified that expenditure ‘salience’ can make it easier for consumers to track and ‘slot’ expenses into mental accounts. Heath (1995), for instance, found that, salient expenses were easier for subjects to track, however, when they were less salient, expenses became more difficult to track and budgeting was undermined (as an example, using a card may make expenditure less salient, while paying with cash, may make expenditure more salient).

This has clear implications for cashless payment methods. If a consumer cannot easily track expenditure, consumers may experience difficulties with both mental accounting and budgeting. Accordingly, mental accounting is likely to be more difficult in cashless gaming.

Which groups in the community may be less well-equipped for mental accounting?

Other literature highlights that certain individuals may be less adept at mental accounting. Muehlbucher and Kirchler (2019), for instance, studied individual differences in mental accounting across three experiments. Of particular note is the finding that people with low financial literacy and low education were poor at mental accounting.

Wave 16 of the Household, Income and Labour Dynamics in Australia (HILDA) Survey provides a contemporary measure of financial literacy in Australia (HILDA, 2018). This study measured financial literacy using the approached developed by Lusardi and Mitchell (2014).

Results of the financial literacy questions revealed that some groups had lower financial literacy than the rest of the population. These included females, young people aged 15-24 years, people 65 years and older, Indigenous Australians, immigrants from other countries, people with lower education (especially people who did not complete high school), people who were unemployed and people receiving government financial support.

Accordingly, findings may suggest that groups in the community with lower financial literacy, lower education and related vulnerabilities may be less well-equipped to perform mental accounting and may also struggle with the more complex mental accounting required of cashless payment methods.

What areas of the brain are activated when consumers use cash?

Ceravolo et al (2019) is the only known study to explore the neural correlates of different payment methods. This was an attempt to identify areas of the brain that may be triggered when different payment methods are used.

The study examined neural activation associated with payment methods using functional MRI (fMRI). Payment methods examined included cash, card and smartphone. Payment methods and amounts were varied under different experimental conditions based on a block design protocol. Video imagery was shown to subjects, which displayed a human hand paying using different methods.

Findings overall showed that payments with cash were associated with higher activity in the parietal cortex and right insula (compared to card and smartphone conditions). This also occurred for all amounts of money tested.

Overall, results suggested that cash may enhance both the salience and negative affective valence of handing over money. As there was stronger activity of areas of the brain involved in processing aversive stimuli, results tend to suggest that spending cash may be associated with a negative experience (i.e., handing over money or reducing available money).

The authors then inferred that this may mean that cash is a stronger self-regulating tool. Findings were also described as potentially relevant to addictions such as compulsive shopping and gambling.

What does this tell us?

In summary, research highlight that:

- Online accounts, as available in cashless payment methods, may be cognitively more complex for consumers to understand than paper.
- Certain segments in the population may experience difficulties with payment methods that require processing of complex cognitive information in working memory including people with depression, anxiety and psychotic disorders and older people.
- When expenses are less salient (e.g., a large volume of small payments), they are likely to be more cognitively difficult to track, undermining consumer budgeting.
- Mental accounting research shows that consumers cognitively label expenditure accounts and this is an important part of budgeting and expenditure tracking.
- Mental accounting is likely to be important in being able to manage cashless payments. However, research shows that some groups may struggle with mental accounting. This includes people with low financial literacy and low education.
- Some early neuroscience research suggests that spending cash, as opposed to a credit card or debit card, may be perceived as a ‘negative experience’, suggesting that use of cash may support consumer self-regulation.

What do we know about the effects of common cashless payments such as credit and debit cards?

What does literature say about the psychological effects of cashless payment methods such as credit and debit cards?

While research is still to examine the cognitive effects of different cashless payment methods, a range of studies have examined the impact of credit cards on consumer behaviour. Such findings may shed light on the psychological effects of payment methods in the context of general consumer spending.

One of the most significant and consistent findings in this research is that consumers spend more when exposed to a credit card or when paying by credit card (e.g., Soman and Cheema, 2002; Shimp and Moody, 2000). A range of studies illustrate these effects on consumers.

A study by Chatterjee and Rose (2012), for instance, found that credit cards 'prime' consumers to think about product benefits, while cash encourages consumers to make 'cost considerations'. In addition, the same authors suggested that because payment is separated from consumption, repeated use of credit cards can serve to reinforce positive feelings of purchasing, while use of cash reinforces cost considerations.

This is also not a recent finding. In particular, Feinberg (1986) found that, compared to no prime, a credit card prime was associated with a 200 per cent increase in donations in a laboratory experiment.

Other researchers have observed similar findings for children. Naderer et al (2016) identified that, even the presence of credit cards and Visa symbols on Monopoly game credit cards primed children and led to greater expenditure in an online shopping task.

This effect was independent of the child's age, suggesting a persistent effect. It was proposed that use of a card in the Monopoly game, as opposed to the more traditional format using cash notes, 'obscured transactions', as only amounts on a small screen were displayed.

Wong and Lynne (2017) describe the credit card effect as essentially having an 'easy money' effect (p542) and comment that studies have suggested that media may further reinforce this perception (e.g., Lakshmi, 2008). Research is used by the authors from the field of cognitive dissonance to create an argument that credit cards may be viewed as 'easy', because there is little effort put into earning the money.

The authors also use literature on mental accounting to suggest that credit cards may have a mental account that is labelled as 'easy money' and when being used, the label is triggered and carried over to purchasing.

The authors came up with a range of hypotheses to test these effects in laboratory settings. It was hypothesed that showing credit card cues will increase the perception that money is 'easy' and that giving consumers a 'hard work' reminder will reduce credit card spending. Cash was used as the control group in all experiments.

In this study, the 'pain of payment' was assessed using the Rick et al (2008) Spendthrift-Tightwad (ST-TW) scale. Study findings confirmed the presence of the 'easy money' effect for credit cards. Reminding consumers of hard work was associated with a decrease in credit card expenditure, though this only happened for ST participants (not for TW).

In addition, individual sensitivity to 'pain of payment' moderated the effect of credit card cues on spending. Spendthrift participants spent more than TW participants when exposed to credit card cues. It was then recommended by the authors that consumers should keep a 'hard work' sticker in their wallet or close to their credit card to reduce overspending.

One of the proposed effects of credit cards involves the presence of payment 'decoupling' (Prelec and Loewenstein, 1998). This involves the purchase transaction being separated in time from the consumption experience. The more separated the payment is from the purchase, the lower the pain of paying and the higher 'willingness to pay'.

A higher willingness to pay has been established across many studies and types of payments. This includes for credit cards (Prelec and Simester, 2001), stored value cards (Soman, 2003), debit cards (Runnemark et al., 2015), and multifunctional bank cards (Gafeeva et al., 2018).

Possibly highlighting a similar view in different words, Delnevo (2018) reported a view that the movement from cash to card use has persuaded many consumers to spend more than they earn and more than they can afford.

A recent study by Shah et al (2016) demonstrated how paying by cashless methods can influence a consumer's connection to a purchase. As the experiment involved payment manipulation (i.e., cash, plastic, voucher or cheque), the objective was to establish a causal link between payment and an individual's connection to a product.

The experiments showed that pain of paying significantly influences the consumer's psychological and behavioural connection to the purchase. That is, consumers are more financially, psychologically and behaviourally committed to products, if they pay with a more painful method.

The authors then concluded that decreasing pain of payment cannot only increase overspending (as costs are not immediately felt), but can also lead to greater product disposal or abandonment (given the lower purchase satisfaction).

It was proposed that credit cards, debit cards and other payment methods – like Google Wallet and PayPal - have potential to produce this effect, as they are increasing the psychological distance from payment, making spending less and less painful.

Interestingly, a recent master's thesis study by Zhirkova and Saric (September 2020) also found using an online gaming experiment that use of virtual currencies increased consumer spending on microtransactions, mediated through a lower pain of paying threshold (when compared to use of local currencies). Accordingly, this may also suggest that use of crypocurrencies or other virtual currencies may similarly facilitate increased consumer spending on gambling, as a further type of cashless payment method.

In addition, in a further thesis submission Salzman (2021) conducted an experiment where participants were given a windfall amount of money via either a peer-to-peer payment mechanism or via a bank deposit. Findings showed that participants using the peer-to-peer method showed 'mental accounting biases' and showed higher consumption and spending (i.e., they spent significantly more on tips and donations in the experiment).

A further study by Manshad and Brannon (2021) interestingly tested the effect of haptic mobile vibration feedback on the pain of payment associated with cashless payments. When vibration alerts were provided to give users a sense of the value of the money they were spending, findings counter-intuitively showed that, lower intensity vibration feedback (as opposed to higher intensity vibration feedback) reduced their reported willingness-to-spend, when compared to a control group.

Does the 'easy money' effect also apply to debit cards?

As debit cards are the most popular consumer payment instrument in Australia (RBA, 2020), this also raises the question about whether the same 'easy money' effect of credit cards may also apply to debit cards. Runnemark et al (2015) investigated this in an experiment in Denmark.

As in Australia, debit cards are the most popular type of card in Denmark. At the time of the study, 87 per cent of the population (aged 15-79 years) had the national debit card, Dankort (Nationalbanken, 2014). While similar to credit cards, debit cards are somewhat different, in that payment is not quite as 'decoupled' from the consumption experience, as money comes directly from a consumer's account.

The authors cited literature relating to the easy money effect of credit cards to propose that a similar effect may apply to debit cards. The authors additionally argued that cash payments are more transparent than debit card payments, making it easier to control spending.

Some interesting insights were identified in the Runnemark et al (2015) study. Findings showed that consumers were willing to pay more for identical products with debit cards (than with cash), highlighting that cash makes it easier to control spending.

The authors then used study results to emphasise that, similar to credit cards, there is no feedback mechanism for consumers in debit cards. They recommended that feedback mechanisms should be developed to assist consumers.

Examples were given such as text messages, mobile phones and displays in next-generation payment cards (i.e., cards that display balances on the actual card).

Other research has additionally looked at how debit card use impacts impulse purchasing. This was examined in a study by Manoj et al (2001). The study involved analysis of food purchases of 1,000 households over six months.

Findings showed that, when purchases were made with debit cards, they were associated with more purchasing of junk food. This was said to be triggered due to 'impulse purchasing behaviour'. In this context, 'pain of payment' of cash was described as curbing the initial tendency to purchase such items.

Greenacre and Akbar (2019) further extended literature by examining grocery expenditure by low income customers using a welfare-based cashless debit card. This was of interest, given that fixed income consumers cannot increase their total spending. Findings showed that, while low income consumers could not increase their spending, they become less sensitive to price cues when shopping for groceries using the welfare card.

What role does payment transparency have in influencing consumer behaviour?

A further area of research that may explain the 'easy money' effect of credit cards and other cashless methods relates to the concept of 'payment transparency'.

Soman (2003) described payment transparency as being related to the salience of a payment. In this context, high payment transparency is proposed to create an aversion to consumer spending, as consumers experience the pain of paying (Shah et al, 2003; Prelec and Loewenstein, 1998).

In comparison to cash, a credit card is described as less transparent, because it is not in a physical form and does not involve counting. Card payments are also less transparent due to a decoupling effect, where payment is separate from consumption (Prelec and Loewenstein, 1998).

Soman (2001) proposed that spending recall is less accurate when there is reduced payment transparency. The author found in a small study that the amount spent on books was easier to recall for cash, compared to credit card transactions. In this context, cash was considered as the most transparent and physiologically proximal type of payment.

In comparison, paying by cheque or voucher was less transparent and less 'painful', as no physical money changes hands. In addition, the author proposed that plastic forms of money – such as debit cards, credit cards and vouchers – are less transparent and the swiping of cards may further obscure the cash value of purchases.

Other studies highlight a role for increased payment transparency and provide evidence that credit cards are the least painful and transparent followed by debit cards, while cash is the most painful and transparent method of payment (e.g., Raghubir and Srivastava, 2008; Runnemark et al., 2015; Soman, 2003).

What do we know about consumer behaviour and contactless payments?

As a relatively new payment technology, contactless payment methods have received much less research attention. Since the introduction of Near Field Communication (NFC) technology in 2002 (Coskun et al, 2012), many retail payments have become contactless.

The technology requires consumers to use NFC enabled payment cards or smartphones for over-the-counter payments. Karjaluoto et al (2019) proposes that nothing will stop NFC from becoming the most popular and standard accepted method for small retail payments globally.

Boden et al (2020) is one of the few studies to investigate the 'pain of paying' using a contactless payment method, namely mobile, compared to credit cards. This was identified as a research priority by Shankar et al (2016).

Mobile was expected to be virtually the same as a credit card in terms of 'pain of payment' for a number of reasons. In particular, it was argued that both run through the same credit/debit card system, both are non-restrictive in what can be purchased (relative to cash) and both have similar levels of transparency.

Data across different country market data sets was analysed as part of the research. Findings did show that pain of paying did not differ between methods suggesting similarities of mobiles to credit cards.

What effect do multifunctional cards have on consumer behaviour?

Multifunctional cards, which bundle payment with other features (e.g., loyalty programs, user identification etc.), are increasingly popular across the world. These typically work via smartcards, where an embedded chip or processor can store and process data (Shelter and Procaccino, 2002).

Gafeeva et al (2017) reported that the shift towards payment multifunctionality has some drawbacks for consumers in that it also may reduce payment transparency and affects consumer recall of expenditure.

A study of 496 consumers was conducted by the authors to examine recent recall of purchases with cash, a regular payment card (with only payment functionality) and a multifunctional card. Literature from cognitive psychology was used to explain that information is easier to memorise when it is perceptually salient or distinct (e.g., Brunel et al, 2010).

Findings showed that consumers paying with both a single and multifunctional card were more inaccurate in their purchase amount recall, than customers paying with cash. However, while a lower recall was expected for a multifunctional card, compared to a single function card, there were no recall differences between the two payment

modes. In addition, for multifunctional cards, low payment distinctiveness was found to reduce the recall accuracy of expenditures.

Accordingly, while the topic requires more research, there appear to be risks from multifunctional cards for consumers, when compared to cash. In particular, low payment distinctiveness may reduce the ability of consumers to accurately recall card expenditure (and is other addition to other effects of cards such noted previously).

What are other possible reasons why consumers may prefer cash?

A number of other studies have also examined why there is still strong interest in cash in consumers.

Jonker (2015) reported that consumers primarily use cash for budget control. An early study in 2007 (Jonker 2007) found transaction speed was the top reason for using cash,while the second and third reasons were for monitoring expenses.

However, ten years later in 2014, the reasons for using cash shifted dramatically and the top three reasons were to monitor expenses, habit and to cut expenses.

Jonker (2015) noted that one of the main benefits of cash is that the consumer gains immediate feedback on expenditure. Wallets can be physically checked after a payment is made, to ascertain how much money is left. While debit cards can also be checked, this was proposed to be less effective, as there is a delay in accessing such information.

Cash was similarly reported to be unique in being able to easily constrain a budget. Consumers using cash simply withdraw the desired amount, which facilitates budget adherence. However, with debit cards, consumers have relatively more freedom to spend more than they had intended. It was also reported that they need to memorise information such as what they spent and what money is in their account.

Eschelbach (2017) examined the protective attributes of cash in relation to needless purchases. It was expected that cash use may be helpful if consumers feel temptation to purchase an unnecessary item during shopping, given that it reinforces the ‘pain of paying’. Based on a Bundesbank survey (in Germany), findings showed that transactions had a lower probability of being identified as ‘unnecessary’, where consumers paid in cash.

What does this tell us?

In summary, the research highlights that:

- Consumers may spend more when exposed to a credit card or when paying by credit card. In comparison, cash may encourage consumers to make cost considerations.
- Credit cards may have an ‘easy money’ effect on consumers
- Reminding consumers of the work needed to obtain money may be associated with a decrease in credit card expenditure.
- Research indicates that, the more separated payments are from purchases, the lower the pain of paying and the higher consumer ‘willingness to pay’.
- Using cash as a method with a high ‘pain of payment’ may assist with impulse control.
- Credit cards may be the least painful payment method, followed by debit cards then cash.
- Debit cards also exhibit many of the same effects of credit cards, when compared to cash.
- For multifunctional cards (e.g., cards that combine two functions such as loyalty cards which are also payment cards), low payment distinctiveness is likely to in addition reduce the recall accuracy of expenditure.
- Transactions may have a lower probability of being identified as ‘unnecessary’, where cash is used.

SECTION 3.
WHAT DOES THE GAMBLING RESEARCH LITERATURE TELL US ABOUT CASHLESS GAMING?

Research on cashless gaming and gambling

What do we know about cashless gaming and gambling?

In spite of cashless gaming systems being widely available across Australia, little research has rigorously examined how the transition away from cash has impacted on gambling behaviour and expenditure. Nisbet (2005) defined cashless gaming as the 'replacement of cash in and cash out payment mechanisms on a gaming machine with non-cash substitutes' (p55).

Nisbet (2005) was one of the first authors to have examined venue and gambler experiences of cashless gaming in an Australia gambling venue. The study involved 20 qualitative stakeholder interviews as part of the information gathering approach. Both advantages and disadvantages were probed during data collection.

Key advantages of cashless gaming for venues were reported to include:

- increased security
- improved marketing and customer service
- a reduction in overheads through a decreased need for machine maintenance
- reduced wages were a further benefit due to a need for fewer security and floor staff.

A range of advantages were reported for regulators. These included improved integrity and security over EGM operation including better protection of taxation revenues.

Given that the cashless systems reviewed had harm-minimisation features, these were also reported as a benefit of cashless gaming.

In a survey of 134 players within the study (across two NSW clubs), a range of advantages for gamblers were identified (Nisbet, 2005). These included the availability of player activity statements, availability of PIN numbers for card security and access to a reliable and easy to use system.

As two-thirds of the players reported a preference for anonymity during play, the identification of players was described as a disadvantage of cashless gaming from a player perspective.

At the time of the study, Nisbet (2005) indicated that around half of players preferred to gamble with cash, highlighting that the system did not meet the preferences of all gamblers.

While industry stakeholders argued that a benefit of cashless gaming was the availability of harm-minimisation features, the sample of gamblers interviewed in the survey did not report that these would help with their management of expenditure. However, gamblers reported that cashless gaming permitted easier moving between EGMs, easier loading of balances onto cards and easier processing of payouts.

Nisbet (2015) additionally conducted further qualitative research with 26 cashless card users (and four non-users). Based on discussions with gamblers, Nisbet (2015) reported a view that gamblers gamble more responsibly with account-based cards or tickets, compared to cash. Some cashless gamblers reported keeping money on their card for safe keeping and would play it down prior to using money from other sources. Ticket gamblers (using TITO) would similarly hold tickets in their wallet until the end of a gambling session.

The author also indicated that gamblers did not perceive that the cashless system impacted individual expenditure, session length or breaks in play relative to cash. In addition, some gamblers espoused a view that cashless gaming

helped with their gambling money management, although the author identified the need for further research on this topic. It was uncertain as to why they thought this. It may due to the card account, the presentation of money instead of credits on the card screen or due to the ability to transfer small amounts of money from the card towards the end of their gambling session.

The ACT regulator of gaming, the Gambling and Racing Commission, provided insight into early gaming expenditure on ticket in and ticket out (TITO) in the ACT in a submission to the Inquiry of Elements Impacting the Future of the ACT Clubs Sector (ACT Gambling and Racing Commission, May 2015).

TITO was reported to have been approved in the ACT in 2004 and since commencement of TITO in October of that year, the Commission reported that it had not seen any significant increase in EGM revenues for the club industry as a whole.

It should, however, be noted that this was only based on a review of aggregated expenditure and did not involve a review of individual changes in gambler EGM spending.

A further comment about TITO was made in the 2004 NSW Independent Pricing and Regulatory Tribunal (IPART) enquiry. The Tribunal indicated that various stakeholders had commented that TITO may offer a benefit for harm-minimisation in that it did not require gamblers to wait around for hand-pay outs. This was because it was proposed that a long wait for staff may entice gamblers to continue gambling.

However, the tribunal expressed concern that TITO may reduce circuit breakers inherent in manual EGM operation (i.e., the physical handling of money), suggesting the potential for increased gambling harm.

The tribunal concluded that, because there was no research on this technology at the time, that any proposed introduction of TITO should be evaluated on an evidence basis. It also led to the conclusion that TITO for this reason should not be introduced at that time.

While not a harm-minimisation report and written some years ago, Palmeri (2003) reported that key benefits of TITO to industry included reduced costs of labour and equipment (by an estimated 30 per cent or more – due to no hand payouts, hopper refills or coin handling equipment), increased speed of play (by 15 per cent) and less machine downtime (increasing profits to venues). This also highlights an industry view that speed of play may increase (although the basis for this estimation was not available). It should also be noted in this context that speed of play is generally driven by EGM spin rate and that the only increases in speed would relate to gambler movement between EGMs and more efficient starting and re-starting of gaming, given that cash is not required (i.e., with cash, ATM access may be needed, while with card, access to cash is immediate).

What impacts does cashless gambling have on gambling harm? Some UK insights

Parke et al (2008) conducted a major review of cashless and card-based responsible gambling features for the UK Gambling Commission. The aim was to consider the extent that cashless and card-based gaming may reduce problem gambling or promote responsible gambling.

This paper provides a good example of why it has been challenging to identify the effects of cashless gaming, as distinct from the tools and features associated with card-based gaming. They are often integrally linked and thus difficult to separate from a research and evidence perspective.

During the review, Parke et al (2008) conducted surveys of regulators globally to identify jurisdictions considering or using cashless gaming. Many jurisdictions at the time had no firm regulations in place to cover cashless gaming.

It was commented that many of the contacted jurisdictions felt that there was a lack of robust empirical evidence to develop policy and regulations.

There was little consensus across stakeholders interviewed by Parke et al (2008) over the potential for either cashless gaming or TITO technologies to minimise gambling harm. This was largely because there was no clear empirical evaluations of cashless gaming.

Most cited views related to 'soft' gambler and venue advantages (e.g., increased convenience), as no research had examined whether cashless gaming itself was associated with gambling harm. Although there was reported to be higher confidence in card-based gaming, relative to TITO, presumably due to the harm-minimisation features available in card accounts.

Parke et al (2008) briefly explored the use of 'remote loading' as a payment method. This involves the option to use debit cards in some betting outlets in the UK (e.g., funds are loaded at a central desk or kiosk and are then transferred to the EGM or gambling product of choice, often through a wireless connection). As such, it was considered a 'cashless method' of payment. Note that this system is not available in Australia but some form of it is likely to be proposed here at some point,

While the authors commented that there was again no robust evidence relating to the impact of this payment method, they expressed an overall view that it may be associated with increased harm. It was felt that remote loading may impose increased risk to problem gamblers, given the lack of breaks in play to access funds.

Bedford (2019) presented in a research-related blog a number of views about cashless gaming in the UK. The author emphasised that cashless gaming is now being recommended by the UK Gambling Commission, as it is viewed as having more potential to limit harm, than cash-based methods.

Bedford (2019) reported that the Commission stated that cash-based payment methods, due to their anonymity, were undermining harm-minimisation (Box 6). In disagreement with this view, Bedford (2019) asserted that cash can be useful for limiting spending, whereas card use may speed up play and induce automaticity by reducing breaks in play.

Box 6. UK Gambling Commission perspectives on cashless gambling

The anonymity currently inherent in cash-based gambling makes identifying and reducing harm much more challenging than it otherwise might be. It hampers research into the causes of harm and cost effective ways of mitigating it.

And it makes more advanced player protection measures, such as feedback from patterns of play over time and associated operator action, virtually impossible to introduce effectively. It is also important to recognise that for some customers – those engaged in the disposal of criminal assets or fruits of the black economy – anonymity is highly attractive.

Added to this, we are now in a world where new forms of harm reduction, based on data analytics, are becoming possible….Account-based or registered play – with the ability to link play to identified players over time – offers opportunities to identify those who potentially might be at risk of harm

(UK Gambling Commission 2015a: 3) (Cited in in Bedford, 2019)

Accordingly, while assertions by Parke et al (2008) highlight that a key benefit of cashless gaming is that the gaming can indeed be trackable and that harm-minimisation tools can be offered (which is true of card-based gaming), the authors' survey of regulators highlights that jurisdictions could not identify robust research to develop informed policy positions on the effects of cashless gaming.

Comments by the UK Commission similarly highlight that there has been a tendency to conflate the impacts of cashless gaming with the impacts of player tracking and card-based gaming.

A more recent study commissioned by the UK Gambling Commission examined land-based gambler concerns about cashless payment methods (2CV, 2021). This involved an online survey of 314 land-based gamblers. Interestingly, findings of this UK study highlighted a strong gambler preference for cash, with 79 per cent reporting that paying with cash generally helped them to feel in control of their spending and 70 per cent reporting that paying with cash made it easier to set limits on spending.

Cashless payment methods were additionally found to have drawbacks. Around 85 per cent reported that paying with a cashless payment method, such as a debit card or contactless payment method (e.g., using a mobile), made it easier to spend more than intended and 77 per cent reported that this led to them spending more time than had intended to spend on gambling. Around two-thirds (66 per cent) similarly reported that it gave the impression that they were spending less money.

Land-based gamblers reported that they tended to spend over their intended amount, when paying for gambling using cashless methods – including with cards (with chips and a pin), with a mobile or smartwatch and with a contactless card. However, they tended to spend as they intended to when cash was used.

Preferences for cashless payments were also identified. Findings showed that younger gamblers, moderate risk gamblers and problem gamblers tended to prefer cashless payment methods.

It was similarly noteworthy that 48 per cent of all land-based gamblers preferred cash when playing fruit machines / slot machines, when betting on sports or races and when in the casino.

Qualitative research with gamblers additionally highlighted that the findings relating to cashless payments were mainly – *Because a card is not physical money, you can disassociate with the money element of what you're doing*… (described by the authors as lacking a 'flinch' moment that typically occurs when someone parts with cash) (2CV, 2021 - p8).

The authors then concluded based on key findings that it would be important for land-based gambling venues to continue to allow use of cash to help gamblers maintain good control over their expenditure.

A very recent review of research examining the impact of payment format on gambling using experimental methods by Palmer et al (2021) found very little relevant research and concluded that there was a paucity of experimental research testing the true effects of cashless payment methods on gambling.

What may credit card use in online gambling potentially tell us about cashless gaming?

As a type of cashless payment, Sztainert et al (2020) conducted a review of the role of credit cards in gambling for the UK Gambling Commission. Based on the evidence reviewed, credit cards as a form of cashless payment were described as potentially problematic for three reasons – they are easy to obtain and can be used to gamble, they offer large credit potential, and they facilitate play without natural breaks. Use of cards was found to be associated with gambling problems.

Sztainert et al (2020) reported that most jurisdictions had implemented some form of restriction on credit cards to protect consumers. These included financial institutions banning or limiting their use for online gambling, credit card holders blocking gambling transactions, limitations on the use of credit cards in casinos, banning credit card use in land-based and/or online gambling and setting and enforcing maximum deposits.

As part of their study, Sztainert et al (2020) analysed payment methods used across a selection of online gambling sites during February 2019. The analysis revealed that only five per cent of deposits to online gambling sites were made through a credit card and 81 per cent were made with a debit card.

The next most common payment method at 11 per cent, was eWallets, which are funded through credit or debit accounts. In contrast, only one per cent of deposits were funded by pre-paid cards and two per cent by other methods.

It was reported that many online gamblers in the UK used e-wallets, which effectively function as deposit accounts similar to a bank account. It was felt that banning credit card use for gambling can lead gamblers to use eWallets and online payment providers to 'circumvent' credit card use restrictions by financial institutions.

Accordingly, this highlights the potential for eWallets to trigger gambling harm, if cashless gaming balances are funded through credit cards or hidden monetary transfers.

Overall, Sztainert et al (2020) highlighted that credit cards are a harmful type of cashless payment and most jurisdictions have implemented measures to ban their use in gambling for this reason. However, it was reported to be unclear whether debit cards had the same effect.

What does this tell us?

In summary, research highlights that:

- Cashless gaming is seen as convenient by gamblers and makes it easier for gamblers to move from EGM to EGM.
- It remains unclear whether cashless systems provide any consumer or harm reduction benefits.
- There was a concern among researchers examining remote loading cashless systems that they had the potential to increase harm, including by making the gambling more continuous.
- Industry identified as a benefit of cashless gaming that it would speed up gambling.
- Cashless gaming may better protect taxation revenues for gambling regulators.
- In 2004, IPART in NSW concluded that there was insufficient evidence to understand the effects of cashless gaming. Similar conclusions were also drawn by Parke et al (2008) after a survey of gambling regulators.
- There has been a tendency of some jurisdictions – such as the UK – to conflate the effects of cashless gaming with the effects of player tracking and related card-based gaming tools. This may indicate that some regulators have not considered that cashless gaming itself may pose risk or harm to gamblers.
- Research relating to online gambling highlights the use of e-wallets. These are seen to pose some risk to gamblers, if credit cards can be used to make 'hidden' monetary transfers to e-wallets. This highlights a possible risk of e-wallets in the context of cashless gaming.

What does pre-commitment research tell us about the possible effects of cashless gaming?

While cashless gaming has not been the subject of in-depth research, some research from Australian pre-commitment trials provides indirect insight into possible effects of cashless gaming. However, it is important to recognise that the effects of cashless gaming are discrete from these tools and this research is not able to untangle these effects.

What have we learned about cashless gaming from Australian precommitment trials?

Queensland pre-commitment evaluations

Pre-commitment trials in Australia have generally demonstrated that very few gamblers will take up pre-commitment (e.g., Schottler Consulting, 2009). In spite of this, some venues have still managed to encourage patrons to use cards offering *both* cashless gaming and pre-commitment (e.g., Schottler Consulting, 2005). This may suggest that such cards are primarily used, because cashless gaming is attractive.

A range of insights have been learned about cashless gaming from Queensland pre-commitment trials. Queensland has been a leading jurisdiction in the evaluation of pre-commitment tools for EGM gamblers, with three trials undertaken since 2005.

The first trial evaluated a small card-based cashless gaming system that allowed gamblers to pre-commit in a hotel during 2004-2005 (unpublished report, Queensland Government). While the focus of the evaluation to was not to examine cashless gaming, feedback from gamblers highlighted that the cashless component of the pre-commitment system was very convenient and helped gamblers easily move from EGM to EGM (e.g., no waiting for hand pay outs etc.).

This highlighted positive feedback about cashless gaming from a player convenience perspective.

Based on results of the initial trial, two further evaluations of pre-commitment systems were undertaken by Queensland Government during 2008 and 2009. Trials included surveys and focus groups with gamblers, venue staff and pre-commitment system manufacturers (Schottler Consulting, 2008 and 2009).

The 2008 and 2009 trials involved evaluation of pre-commitment systems that offered cashless gaming, with again the focus on evaluating the precommitment component. Analysis of uptake curves for each trial showed that usage peaked for both trials at around three to four months post-implementation. A total of 66 gamblers trialed the first system and 341 gamblers trialed the second (the second was implemented in a much larger gambling venue).

As both systems offered cashless gaming alongside pre-commitment, gamblers using each system were not required to set limits (i.e., they could just opt to use cashless gaming on their card). However, analysis of gamblers electing to set limits was undertaken as part of each trial.

For the 2008 trial, 28 per cent of gamblers opted to set a daily spend limit and most limits set were conservative ($100 was the maximum limit set). For the 2009 trial, only 13 per cent of gamblers opted to set a daily spend limit and limits were again very conservative ($100 was also the highest limit set). This also highlighted that monetary limits, rather than time limits, were of most value to gamblers.

As gamblers at both trial sites did not extensively use the available pre-commitment tools, it is possible that a reasonable proportion of gamblers in each trial may have seen value in cashless gaming. However, as the purpose of the evaluation was to examine precommitment, there was not an evaluation of how cashless EGM play, compared to cash based play. This would also have been extremely difficult to assess, given that cashless gaming was introduced *with precommitment*.

Anecdotally, however, gamblers reported in both trials that cashless gaming was convenient and encouraged thoughts about gambling expenditure. This was attributed to being able to store money on a cashless card/device.

When providing unprompted general views about card-based gaming, qualitative feedback from the 2009 larger trial indicated that some gamblers saw benefit in being able to better track their gambling expenditure (Schottler Consulting, 2009) (Box 7).

Schottler Consulting (2009) additionally reported that a segment of gamblers seemed to find it more difficult to keep track of their spending using cashless gaming (compared to cash). It was unclear why this was the case, however, it was attributed to individual gambler differences and preferences.

A comment by a gambler summarises the theme – *If you are taking cash out of your wallet, you are more aware of how much you are spending. With the card, you do not realise how much you have spent* (Schottler Consulting, 2009, p33).

Other feedback similarly highlighted that some gamblers tended to forget card balances and lose track of their expenditure – *On Thursday, my balance was $80 and then I played on a few machines. The balance came down to $40 and I did not stop. The next time I checked, it was $11. It's easy to lose track of things.*

Findings from the 2009 trial suggested that more than half of gamblers taking part in the survey (57 per cent) found that the card encouraged them to think more about their EGM expenditure, compared to cash based gaming (Schottler Consulting, 2009).

When gamblers were asked about how their expenditure had been affected, 79 per cent reported a perception that card-based gaming had not impacted their expenditure. In addition, 17 per cent indicated that they thought it had reduced their expenditure and 2 per cent indicated it had increased their expenditure.

Accordingly, while gamblers reported cashless gaming as convenient and possibly helpful for money management, such comments may indicate that *some* gamblers also find cashless gaming more difficult to monitor expenditure. This may suggest some individual differences between gamblers.

Box 7. EGM gambler reported benefits of cashless gaming (Schottler Consulting, 2009)

- *Sometimes you can be sitting at the machine for ten minutes if you use cash. The staff are very busy.*
- *Using the card helped me. I did not have to get my hands dirty from the coins.*
- *It is easy to collect your big win. Photo ID is not a problem.*
- *If I use cash, I sometimes drop my money. This (now) doesn't happen.*
- *Sometimes while playing, my balance gets down to 14 cents. If I am playing with cash, I keep putting more in. When the balance on my card is done, I just pull it out.*
- *I can transfer small amounts of money onto the card.*
- *The card is smoother to move around (from EGM to EGM).*

While Queensland precommitment trials cannot identify the discrete effects of cashless gaming, a range of useful insights can potentially be inferred from trial findings:

- Where cashless gaming is available, is it possible that the cashless gaming component may be of more gambler interest than the precommitment tools.
- Cashless gaming allows gamblers to move more efficiently from EGM to EGM.
- Cashless gaming reduces gambler waiting for hand pay outs (as cards can be automatically removed, with balances transferred) and this is viewed as very convenient.
- If precommitment is offered in cashless gaming, very few gamblers will opt to use provided limits.
- Cashless gaming may assist some gamblers with expenditure, but some also find cash easier.

What structural characteristics of cashless gaming systems need to be considered from a harm-minimisation perspective?

While there is little research on cashless gaming, research from trials of precommitment provide insight into **eight important structural characteristics** of card-based cashless gaming systems that raise the potential for gambling harm (or can help protect gamblers). Key characteristics identified in this research are described in this section. It should be noted in this context that these are only specific to card-based cashless gaming, as TITO cashless gaming was not examined in these trials. A review of Schottler Consulting (2009) highlights these findings.

How gamblers store money on and credit money to cashless gaming cards

Most cashless gaming systems allow gamblers to credit their cashless card by either using a cash terminal, or by having gamblers load money directly onto their card while sitting at an EGM. Withdrawal of the card from the EGM then triggers money on the credit meter to be automatically sent back to the card.

Balance limits are set on the card to allow gamblers to control how much money can be kept on the card for EGM spending. Jurisdictions will also typically have upper permitted balance limits for security. While a gambler may have traditionally have had to physically seek further cash to extend gambling expenditure (e.g., via an ATM or EFTPOS), cashless gaming allows gamblers to use any of the money stored on the card for gambling (with only the upper card balance the limit).

This effectively can increase a gambler's access to cash, without having to take a break to reload a cashless card. This highlights that balance limits and how money is loaded onto cards are two important structural characteristics of cashless gaming cards that need consideration from a harm-minimisation perspective.

They also raise an issue about whether gamblers should be permitted to load cash onto a cashless gaming card at an EGM, or whether a terminal distant from the EGM should be accessed. While the principles of pre-commitment may suggest a need to separate the location of payment (pre-commitment) from the location of gambling (implying that distant cash crediting terminals should be used), this may become a logistical issue for venues, with a need to supply a large number of cash crediting terminals.

ATM and EFTPOS withdrawal restrictions also need consideration in this context. In Victoria, as $200 is the maximum EFTPOS limit for a single withdrawal (given that ATMs are not available in venues), the intersection of this limit with cashless card balances needs consideration (as well as the fact that transferring an amount from a card may undermine player interaction with staff when transacting EFTPOS).

If an amount greater than the $200 card balance is spent, it may have potential to undermine the harm-minimisation intent of the EFTPOS withdrawal limit. A similar analogy could be considered for the $500 maximum for EFTPOS transactions every 24 hours. While staff interactions during withdrawals have been proposed as a mechanism to limit the potential for harm in the use of EFTPOS, this will not assist gamblers who keep large amounts on their cards (i.e., no interaction with staff is required to use this money).

Card deposit limits additionally need to be considered for large gambling wins. If a gambler experiences a large win that leads to a card balance being exceeded, it raises the question about whether the gambler should be permitted to take a large win on the card and associated harm-minimisation protocols.

Based on gambler feedback during trials (e.g., Schottler Consulting, 2009), some gamblers reported that a key benefit of card-based cashless gaming was the ability to leave an EGM without waiting for a hand pay out from venue staff. Accordingly, this may suggest that gamblers do feel inclined to spend their wins, if required to wait and points to a possible harm-minimisation benefit.

The intersection of how wins are handled with other regulations relating to reducing access to large wins also needs consideration. In particular, in Victoria, if a gambler has $2000 or more worth of accumulated credits, funds must be provided via EFT or cheque. This aims to minimise harm by preventing gamblers from carelessly spending large wins.

Accordingly, this analysis highlights that the following key structural chracteristics of cashless gaming need to be considered from a harm-minimisation perspective:

Important structural characteristics of card-based cashless gaming

1. Maximum card balance limits for cashless cards – including their intersection with other regulations designed to protect gamblers from potential harm (e.g., EFTPOS limits, cheques).
2. Use of cash crediting terminals and EGM-based crediting of cards as methods of allowing gamblers to place money on their cashless gaming card.

How money is transferred from cashless gaming cards into EGM play

Trials of cashless gaming highlight that, when starting gambling, EGM gamblers are required to transfer money from cashless cards to the EGM credit meter. Research from trials showed that default transfers were not desired by gamblers and encouraged gambling of specified amounts. For instance, a gambler in the 2009 trial, reported that they wished to only transfer $5 to the credit meter and not the default of $20 (Schottler Consulting, 2009).

Accordingly, while an automatic transfer may be convenient for some gamblers, this finding suggests that it may also undermine gambling harm-minimisation objectives. In particular, it highlights that the amount transferred from cashless cards to the EGM credit meter is an important structural characteristic of cashless gaming that needs consideration from a harm-minimisation perspective. In addition, feedback from gamblers highlights that defaults are not appropriate and may undermine informed decision making.

Some precommitment systems (e.g., as reviewed in Schottler Consulting, 2009) allowed gamblers only to change the amount they could transfer to the EGM credit meter by using a kiosk that was distant from the EGM. While this may have some potentially positive effects (e.g., gamblers have to physically walk to the terminal to increase their credit meter transfer limit), some gamblers in the trial wanted to *reduce* their default transfer amount at the EGM and found having to walk to a kiosk inconvenient. This led to some spending more than they had wanted.

Such gamblers wanted to be able to transfer only small amounts towards the end of their gaming session to better control their expenditure. Accordingly, having to walk to a terminal to reduce transfer amounts undermined the gambler's own harm-minimisation objective to control their gambling expenditure.

As smaller transfer amounts may be frequently drawn upon when a gambler is nearing the end of a gaming session, it may imply the importance of giving gamblers the ability to make such reductions at the EGM. In line with principles of pre-commitment, it could be argued that reductions in any settings should be permitted at an EGM, but that increases should potentially be made at a location distant from the EGM location.

Accordingly, this analysis highlights that the following important structural chracteristics of cashless gaming need to be considered from a harm-minimisation perspective:

Important structural characteristics of card-based cashless gaming

1. Maximum card balance limits for cashless cards – including their intersection with other regulations designed to protect gamblers from potential harm (e.g., EFTPOS limits, cheques).
2. Use of cash crediting terminals and EGM-based crediting of cards as methods of allowing gamblers to place money on their cashless gaming card.

Checking balances and gambling expenditure on cashless cards

Precommitment trials involving card-based cashless gaming highlighted that there were three main methods of checking balances on cashless gaming cards – printed player activity statements, by pressing a button on the cashless system at the EGM (where the cashless card in inserted) and at a separate kiosk with touch screens.

Trial research showed that some products do not have balance buttons at EGMs that are salient to gamblers – especially where balances are only presented on a small LCD screen where cards are inserted (e.g., Schottler Consulting, 2009). This was reported to make it difficult for gamblers to check and monitor their gambling expenditure.

A further observation highlighted that all products suffered from poor design of player activity statements. In particular, gamblers were often not able to understand the structure of statements, nor specific information presented on statements. As an example, in one trial, statements consisted of three pieces of thermal paper outputted from a system printer. These confused gamblers about their expenditure due to their format and use of confusing language (Schottler Consulting, 2009).

This highlights the need for careful design of activity statements and user-testing in field to ensure that gamblers understand statement content. As poor design has potential to undermine harm-minimisation objectives, it highlights the need for user research and testing of methods of providing gamblers with expenditure information in cashless gaming.

In addition, as most trials showed that gamblers did not frequently access statements, this raises the question about how and when statements should be provided to keep gamblers aware of their gambling expenditure.

Accordingly, this analysis highlights that the following key structural chracteristics of cashless gaming need to be considered from a harm-minimisation perspective:

Important structural characteristics of card-based cashless gaming

1. The locations that gamblers can access the balance of their cashless gaming cards including the importance of being able to easily check cashless card balances at an EGM and also away from the EGM.
2. The availability of salient buttons on cashless card sandwich boxes adjacent to EGMs that allow gamblers to check the balance of their cashless gaming card.
3. The format, content and format of gambling expenditure on player activity statements.
4. Whether, how often and in what format player activity statements should be provided to gamblers to maintain their awareness of gambling expenditure.

In summary, pre-commitment trials using card-based cashless gaming highlight that the above **eight structural characteristics** may influence the extent that EGM gamblers experience harm through use of cashless gaming. As the design of such characteristics is unique to each system, this highlights the importance of carefully testing systems with gamblers prior to introduction of such systems.

What does this tell us?

In summary, research highlights that:

- While some Australian pre-commitment trials have been based on cashless gaming, research has focused on the effect of pre-commitment and the discrete effects of cashless gaming on gambler expenditure remain unknown.
- Australian pre-commitment trials with cashless gaming have demonstrated many of the same benefits of cashless gaming, observed by Nisbet (2004). This includes not having to wait for pay outs and easier movement between EGMs.
- Research from Australian pre-commitment trials highlights cashless gaming may help some, but not all gamblers, manage their expenditure (especially moderate risk and problem gamblers) – this may point to individual differences amongst gamblers.
- As few gamblers in Australian pre-commitment trials with cashless gaming have taken up pre-commitment, this may suggest that cashless gaming is seen to be more of value than the limits.
- Qualitative feedback from gamblers in Australian pre-commitment trials with cashless gaming highlight that some gamblers found it difficult to remember their cashless account balances.
- **Eight important structural characteristics** of card-based cashless gaming systems have potential to protect or harm gamblers, if they are inadequately designed and not tested for effectiveness.

Specifically:

1. Maximum card balance limits for cashless cards – including their intersection with other regulations designed to protect gamblers from potential harm (e.g., EFTPOS limits, ATM limits, cheques).
2. Use of cash crediting terminals and EGM-based crediting of cards as methods of allowing gamblers to place money on their cashless gaming card.
3. The maximum amount that can be transferred from cashless gaming cards to EGM credit meters.
4. How and where EGM transfer amounts can be set and changed by gamblers including protocols for increasing and decreasing credit meter transfer amounts.
5. The locations that gamblers can access the balance of their cards including the importance of being able to easily check cashless card balances at an EGM and away from the EGM.
6. The availability of salient buttons on cashless card sandwich boxes adjacent to EGMs that allow gamblers to check the balance of their cashless gaming card.
7. The format, content and format of gambling expenditure on player activity statements.
8. Whether, how often and in what format player activity statements should be provided to gamblers to maintain their awareness of gambling expenditure.

What do other bodies of gambling research literature tell us about the possible effects of cashless gaming?

While the discrete effects of cashless gaming – as distinct from cash – have not been researched, gambling research literature in a number of related fields has potential to shed light on possible effects of cashless gaming. This literature is briefly reviewed in this section.

Research on access to cash during gambling and implications for cashless gaming

Key findings of literature

The concept of 'access to cash' is relevant to cashless gaming, as some forms of cashless gambling provide gamblers with a large cash reserve on a gambling card (e.g., $500, $1000 etc.). A growing body of research highlights that access to cash may facilitate continued gambling and that problem gambler access to cash may lead to problematic gambling behaviour.

In particular, Thomas et al (2013) described findings of recent literature to conclude that access to cash devices – such as ATMs – may negatively impact gambling expenditure. This review was part of an evaluation that found that ATM removal from Victorian gambling venues was effective from a harm-minimisation perspective.

Early precommitment research by McDonnell-Phillips (2006) further supports this finding. This study examined precommitment in gamblers and found that access to cash was a trigger in gamblers exceeding precommitments and that this was a more powerful trigger for moderate risk and problem gamblers.

Delfabbro et al (2007) additionally demonstrated that access to cash would occur a number of times for problem gamblers and that ATM use was not a one-off behaviour. Nearly half of problem gamblers in their sample reported obtaining cash 'frequently' or 'always' on two or more occasions using an ATM or EFTPOS at a venue. This compared to only six per cent of non-problem or low risk gamblers.

Victorian gambling prevalence study results further emphasise the harm associated with access to cash (Hare, 2014). The 2014 study identified a strong association between problem gambling and accessing cash from EFTPOS during a gambling session, with problem gamblers accessing cash a mean of 3.5 times and moderate risk gamblers accessing cash a mean of 1.6 times per session (compared to 0.1 times for non-problem gamblers. Both groups similarly withdrew a larger amount of money per session ($317.93 for problem gamblers; $130.12 for moderate risk gamblers), than non-problem gamblers ($65.56 for non-problem gamblers).

More recent observatations were made by Rockloff et al (2019). EFTPOS withdrawals in Victoria were associated with gambling risk and moderate risk and problem gamblers withdrew money more frequently than low risk and non-problem gamblers. Specifically, 12.2 per cent of moderate risk gamblers and 39.7 per cent of problem gamblers made three or more EFTPOS withdrawals, compared to only 5.2 per cent of low risk gamblers and 1.5 per cent of non-problem gamblers.

A study by Schottler Consulting (2017) additionally examined the distance that cash devices – such as ATMs – should be located from gamblers to minimise gambling harm in NSW (as ATMs are located within venues in NSW).

The study objective was to identify a minimum distance for cash devices, as part of a parliamentary review of gaming legislation. The study included an attitudinal survey of 700 EGM gamblers.

A unique aspect to this study is that it looked at distances that ATMs may be used to access cash including which distances may minimise harm. Most notably, findings showed that, while around 19 per cent of problem gamblers would be 'not at all' or 'not very likely' to access an ATM if it was right outside the gaming area, around 27 per cent would be 'not at all' or 'not very likely' if it was 30m or 40m away (differences between 30m and 40m were also negligible). That is, an additional eight per cent of problem gamblers may benefit from this increased distance.

A higher benefit, however, was observed for all at-risk gamblers. While around 55 per cent be 'not at all' or 'not very likely' to access an ATM if it was right outside the gaming area, this increased to around 71 per cent, if the ATM was 40m away (~53 steps), an improvement of around 16 per cent.

Accordingly, while findings only suggest that moving an ATM away from gaming areas may have a small positive impact on problem gamblers, the benefit of distance may be higher when all at-risk gamblers are considered.

This research also further supports the notion that even small limitations on access to cash can have harm minimisation benefits.

What implications might this research have for cashless gaming?

The Rockloff et al (2019) finding, that EFTPOS use is associated with moderate risk and problem gambling in Victoria, adds further weight to the evidence that access to cash is attractive to higher risk and problem gamblers.

Accordingly, if any additional form of cash is available to gamblers – whether available via TITO or through card-based cashless gaming – it is likely to be associated with increased gambling harm. In addition, the Schottler Consulting (2017) study highlights that a reasonable proportion of at-risk gamblers may benefit if cash devices are 30-40m away from gaming areas.

Accordingly, gambling research exploring access to cash in gambling highlights that potentially any form of cash is a risk to gamblers and that harm-minimisation mechanisms need to be developed for consumer protection. In particular, this may imply that any methods of accessing cash that are directly adjacent to gamblers may be associated with increased risk of gambling harm.

Research on the ease of tracking gambling expenditure and implications for cashless gaming

Key findings of literature

A body of evidence indicates that gamblers and particularly EGM gamblers generally find it difficult to track their gambling expenditure. In particular, Auer and Griffiths (2016) conducted a review of self-reported expenditure in gambling studies and found that gamblers are generally inaccurate in reporting expenditure.

They also measured the level of inaccuracy by comparing self-reported spending with actual spending over one month in a study of Norwegian online gamblers (a type of 'cashless gaming'). A sample of 1,335 was used to make the comparison between self-reported versus actual losses. Findings revealed that, while estimated losses were correlated with actual losses, gamblers with higher losses were more inaccurate.

Braverman et al (2014) also conducted a similar study comparing self-reported with actual loss in a sample of online gamblers. Estimations were requested over both a 3-month and 12-month period. The authors found that

estimations were more accurate when gamblers were estimating short-term losses and inaccuracy was higher for gamblers with gambling-related problems.

In addition, they found that more experienced sports bettors and casino gamblers gave more inaccurate estimates of losses than less experienced gamblers. It is also of note that Volberg et al (2001) came up with a similar conclusion to the above studies, when they compared industry-reported data with gambler-reported data (i.e., there were large observed differences).

While studies have not compared the ease of tracking expenditure in cash versus cashless gambling, some anecdotal feedback from gamblers highlights that tracking may be easier for some gamblers using a card-based gambling system.

For instance, some gamblers in Queensland precommitment trials (which also offered cashless gaming) highlighted some benefits of cashless gaming as being able to better track expenditure (e.g., Schottler Consulting, 2009). However, it should be noted, this was only a perception.

Wohl et al (2017) argued that, if gamblers cannot track their expenditure, it becomes difficult to adhere to a self-imposed monetary limit, which is critical for harm-minimisation during EGM play. In contrast, if EGM gamblers are properly informed about expenditure, they should be able to use insights to make an informed decision about how much and whether they should continue to gamble (Blaszczynski et al, 2004). This may undermine the ability to gamblers to gamble responsibly and keep control over their spending.

Wohl et al (2017) additionally conducted an experiment that highlighted the value of providing gamblers with information on gambling expenditure. A sample of 649 gamblers in a casino loyalty program were asked to report how much they had won or lost over a three month period and were then provided their player account data. Interestingly, gamblers who saw they lost more money than they estimated on their statement significantly reduced the amount they bet and lost in their subsequent gambling, in spite of not perceiving they had reduced their play. Such findings highlight that gambling expenditure information can be effective in changing gambler behaviour.

The need to ‘push out’ player activity statements to gamblers is additionally emphasised by Schottler Consulting (2010). In this South Australian precommitment trial (a non-cashless gaming trial), not a single EGM gambler accessed an activity statement during the trial and there were no reports of usage of the account web site online.

Together, such findings highlight that there may be benefit in explicitly providing statements to gamblers (in a paper or another preferred electronic format), regardless of whether they are interested in seeing the data.

What implications might this research have for cashless gaming?

If gamblers struggle to track expenditure in gambling online, it is conceivable that a similar issue will occur in cashless gaming. However, due to the absence of cash, gamblers will not have an immediate reminder of their expenditure (unless they have easy and instant access their account and use that access).

Feedback from Queensland precommitment trials using cashless gaming similarly highlights that cashless cards may help some gamblers, while others find that expenditure tracking is easier with cash.

This may point to individual differences between gamblers and that cash may be better for certain people. Literature demonstrating individual differences in working memory (e.g., Gold et al, 2019, Li et al, 2018) and in processes used in Mental Accounting (e.g., Muehlbucher and Kirchler, 2019) may also explain this.

Given the difficulty gamblers experience in tracking gambling, findings highlight the need to design methods to ensure that gamblers are made aware of their expenditure and the money they have available for gambling.

As precommitment trials show that statements are often not accessed, this may highlight the need to explicitly provide card-based cashless gaming activity statements to gamblers (even if they are not sought).

Research on the tokenisation of gambling and implications for cashless gaming

Key findings of literature

The Productivity Commission (2010) considered cashless gaming and noted that it may 'disguise' the fact that gamblers are spending real money (Productivity Commission, 2010). This refers to a broader concern that cashless gaming may have potential to 'tokenise' gambling, such that the true value of money becomes lessened.

A number of studies in the field of gambling research further emphasise this possibility. In particular, Ladouceur and Sévigny (2009) conducted a study to examine three features of Video Lottery Terminals (VLTs), one of which related to the display of cash versus credits. A feature of the machine allowed credits to be changed to a cash display. It was proposed that a display of credits may be harmful to gamblers, because it tokenises the money spent on gambling. In comparison, it was expected that cash would be more helpful in keeping gamblers aware of their expenditure.

Participants in the study gambled in a real bar environment using their own money. Gamblers were intercepted and asked about the presentation of cash, instead of credits, on the VLT. A particular focus was whether the cash display helped the gamblers to better control their gambling activities.

Findings of the study highlighted that not only were the gamblers aware that credits could be changed to a cash display, but 86 per cent of participants used the cash rather than credit option. In addition, 61 per cent reported that the cash display was more useful and easier for calculating the account remaining and 58 per cent felt that it helped control their gambling.

Accordingly, indirectly, such findings may suggest that certain elements of gambling - like display of credits instead of real cash – have potential to undermine the management of gambling expenditure.

A similar finding was made in a study by Focal Research Consultants (2002). This involved evaluation of various responsible gambling features in VLTs including a cash display feature. Findings showed that gamblers not only very much noticed this feature, but also found it more helpful than the display of credits, as it helped connect gamblers with the value of cash they were using to gamble. It was then recommended by the authors that cash display should be adopted in conjunction with machine based budgeting information.

Lapuz and Griffiths (2010) examined the role of chips in poker gambling to assess the tokenization of gambling. The authors described that people are less likely to spend money in more transparent payments forms. Examples of consumers buying goods with 'virtual representations' of money – such as credit cards – were provided as an example of this behaviour. The study then examined the money spent by forty poker players using either chips or real money to make bets.

As predicted, participants gambled significantly more with chips than real cash. The authors highlighted that results may imply that gambling providers should encourage gamblers to play with real money rather than converting money to chips, tokens, credits or smart cards.

Delfabbro (2011) purported that the use of credits in EGMs, instead of money, was contributing to their profitability and reinforced gambling behaviour. This was said to potentially create the possibility for more rapid play and allowed gamblers to gamble with large credit amounts.

While it was not considered misleading, it was considered problematic in that the use of credits had potential to tokenise money used in gambling. Note acceptors were also considered to have a similar effect. It was recommended that use of coins, instead of notes, may help gamblers better appreciate the value of the cash they are spending.

Other findings demonstrate that elements that 'de-tokenise' gambling may help people with problem gambling. Loba et al (2001), for instance, showed that displaying cash information helps pathological gamblers end their session sooner, compared to when credits were displayed.

Hurla et al (2017) additionally found that helping gamblers visualise the monetary value of their losses by converting these into tangible items may assist gamblers to appreciate the value of money lost (e.g., you just lost equivalent of a trip…').

In a review of effects of recent amendments to Queensland gambling legislation and regulation, Livingstone and Francis (2014) additionally purported a view that the use of tokenised gambling credits was a risk factor for some gamblers and that TITO may exacerbate this. However, the level of harm was reported to be contingent on the TITO credit limits available to gamblers and on rules associated with their utilisation. Although the reductions in cash handling was seen to be at odds with other regulatory changes that allow operators to pay out winnings in cash. Accordingly, TITO was described as having potential to lead to some exacerbation of gambling harm.

One study that did not find an effect of tokenization was an attitudinal survey of gamblers by Blaszczynski & Nower (2008). Blaszczynski & Lia (2008) explored differences in attitudes toward money between gamblers, along with their views about smart card use. The authors espoused that changes in the formats of money may have implications for how physical money is perceived, as compared to notational money (e.g., smart cards). It was proposed that using smart cards, gamblers may distance themselves from money and that this could occur at two levels: the initial transfer of funds to the smart card and the use of smart cards to obtain tokens to gamble.

An attitudinal survey was then undertaken in Queensland venues to test this hypothesis. Contrary to expectations about tokenisation, however, there were no differences found between non-problem and problem gamblers in relation to their tendency to spend more money, if they used tokens or chips, compared to cash. It should though be noted that this was only an attitudinal assessment using an agreement-disagreement scale (i.e., one example item included – *I usually spend more money when I'm using tokens or chips than when I'm playing with cash*).

The authors then speculated that use of smart cards would probably not be associated with a tendency to gamble more. In addition, they provided a view that problem gamblers seeking treatment may benefit from smart cards to improve their control over gambling, but only if they were ready to reduce their gambling.

While the information is now somewhat outdated, Parke et al (2008) additionally described the range of card-based gaming products available across the world at the time of the paper. Most noteworthy is that many of the products were cashless and included card systems, ticket systems, central loading accounts, RFID and integrated products using more than one technology (e.g., biometric ID plus a smart card). Virtually all products listed, with the exception of two cashless wagering products were outlined (both were remote loading accounts). This also highlights that cashless gaming has largely focused on EGMs at the time.

What implications might this research have for cashless gaming?

Together, findings highlight the potential for gamblers to lose track of the value of money and given the use of a token (card) in cashless gaming, it raises the potential for money to also lose value during cashless gaming.

As highlighted by Hurla et al (2017), research also suggests the value of helping gamblers recognise the value of money in the context of cashless gaming. While specific recommendations are not available, equating expenditure to real items of value presents one potential avenue for exploration.

Research on online gaming and implications for cashless gaming

Key findings of literature

Online gambling environments provide a useful context for studying possible effects of land-based cashless gaming, as all play is effectively on an account and is cashless (i.e., just like card-based cashless gaming). Some types of gambling have grown significantly in the past years due to the availability of online gambling.

While the transition of land-based casinos to online gambling is well-researched (e.g., Gainsbury et al, 2019), with the exception of credit cards, dedicated research has not comprehensively studied how payment methods in online gambling may be associated with gambling harm (e.g., credit cards versus debit cards versus e-wallets versus EFT v B-Pay etc.).

Similar to other fields, studies have examined pre-commitment and harm-minimisation tools that 'overlay' online gambling sites (e.g., Gainsbury et al, 2019). However, like land-based trials, research has not separated the harm associated with the tools from the harm associated with the cashless payment methods.

However, a number of studies in the field point to increased risks associated with digital payment methods. In particular, Gainsbury et al (2015) found that, relative to single online gambling account holders, multiple online gambling account holders reported that two disadvantages of internet gambling related to it being both more addictive and easier to spend money. They were also more likely to say that use of credit cards or electronic fund transfers had increased the amount they had gambled.

In a paper about internet gambling and addiction, Gainsbury (2015) reported that the use of digital forms of money such as credit cards, electronic bank transfers and digital wallets appear to lead to increased gambling and losses and this is exacerbated in problem gamblers.

This was purported to be linked to the feeling that gamblers are not spending 'real money'. The author reported that surveys suggest that between 19 and 28 per cent of online gamblers found it easier to spend money *online* relative to land-based gambling. Accordingly, this provides some evidence that certain payment characteristics may trigger increased expenditure.

Gainsbury et al (2020) examined the harm-minimisation characteristics of consumer protection tools on internet gambling sites. While tools are required by regulators and widely available, the authors reported that few tools are used by gamblers. This has interesting parallels to Australian precommitment trials, where tools for precommitment are available, yet are not widely used by gamblers (e.g., Schottler Consulting, 2010). In particular, of relevance to cashless gaming, while account deposit limits are available, a survey showed that only around one quarter of gamblers had used this feature.

It is similarly mentioned that convenient online payment methods limit the ability of online gamblers to maintain control over their gambling. The survey conducted as part of the study found that only 3.5 per cent of gamblers put a limit on their bank account or credit card when online gambling and only 24.6 per cent looked at their personal credit card account or statement. However, 55.5 per cent set a formal or informal budget for their online gambling and 46.6 per cent limited the funds available in their account.

Some self-reported effects of deposit limits on gambling harm-minimisation were noted by the authors. Of the 47 respondents using deposit limits, 63.8 per cent felt that the limits had reduced their spending and 53.2 per cent felt that the limits had increased their control over gambling.

The most common reason for not using the available consumer protection tools related to a belief that they already had control over their gambling and were thus not required. The authors recommended that gamblers should be

'nudged' to use consumer protection tools and that the defaults and anchors used for deposit limits should be changed to prevent sites using extremely high values.

A more recent study by Heirene et al (2021) examined the account data of over 39,000 gamblers across six online wagering sites and found that 83 per cent did not use any consumer protection tools and only 15.8 per cent used deposit limits. They also found that many gamblers who set limits increased or removed them and concluded that account limits were not useful, if they could be too easily changed.

Accordingly, deposit limits and total balances kept on cards may be avenues for future policy consideration, though the ability to alter limits needs careful consideration.

A qualitative study by Hing et al (2015) provided similar evidence that internet gamblers recognise that cashless payments play a role in contributing to the loss of control over gambling. The study involved 25 qualitative interviews with moderate risk and problem gamblers.

Participants reported that characteristics of internet gambling that contributed to loss of control included use of digital money and a lower perceived value of online winnings (a further example of tokenisation). In particular, they held a view that not handling cash had a negative impact on their gambling.

They similarly reported losing track of expenditure during sessions of play and that it was easier to chase losses when gambling with 'digital money'. The authors indicated that using digital money effectively lowered the psychological effect of money and led to a perception that digital money was just 'numbers on a screen', 'play money' or part of a fantasy game without consequences. This was contrasted with having to take out 'real' money in a venue.

Gamblers additionally reported that digital money led to higher expenditure, compared to when they played with cash. This was taken by the authors to infer that use of cashless payments led to impaired control over gambling.

Some notable conclusions were drawn by the study authors. It was concluded that a major contributing factor to online gamblers losing track of expenditure, spending more than they intended and chasing losses was use of digital money which did not feel 'real'.

In response to concern over gambling, some Australian banks have recently started to offer customers the potential to block gambling transactions from their credit or debit card. In Victoria, these include Bank of Melbourne, National Australia Bank, the Commonwealth Bank and Westpac. A range of other banks also prevent use of their credit cards on internet gambling.

Hing et al (2014) examined interactive gambling in a large study of online gambling in Australia. Of interest to the current review, the most common payment methods used by Australian interactive gamblers were credit cards (35.9 per cent), debit cards (25.4 per cent) and direct bank transfers (14.0 per cent). The next three methods were BPay (7.5 per cent), PayPal (5.3 per cent) and Poli (4.3 per cent). Together, 19 per cent of payments used various types of 'e-wallets' to pay for interactive gambling.

One of the most commonly mentioned disadvantages of interactive gambling, compared to land-based gambling, was that it was easier to spend money online. The authors additionally reported that higher expenditure was attributed to the ease and swiftness of being able to repeatedly deposit money into online accounts and due to automatic linking of credit or debit cards and bank accounts. This was reported to effectively reduce any 'cooling off' period and increase opportunities to chase losses.

Together, findings of research on internet gambling highlight that one of the key risks associated with gambling online is the use of digital or 'cashless' payment methods. Such methods have potential to undermine self-control over gambling by creating a perception that money is not real and is not the same 'value' as cash.

What implications might this research have for cashless gaming?

As online casino gambling may be the closest and most well-researched form of 'cashless gaming' available, this may highlight that land-based cashless gaming poses similar risks to gamblers.

In particular, there is substantial evidence that the cashless payments in online gambling may lead gamblers to spend more than they can afford and lose control over expenditure. This is associated with the tokenisation of money, which leads to money being devalued.

As research also shows that many online gamblers do not use consumer protection tools like precommitment, such research may point also to the need for future consumer protection measures for cashless gaming similar to online gaming.

In particular, research showing positive effects for deposit limits in online gambling may highlight that such measures may be useful in cashless gaming. From this perspective, online gambling may provide a 'mirror' to the many possible risks of cashless gaming using electronic payment methods.

What does this tell us?

In summary, research highlights that:

- If cashless gaming cards hold more cash than would typically be available in a gambler's wallet, this may present a risk of harm to gamblers.
- As Victorian higher risk gamblers have been shown to be more likely to access any form of cash to continue gambling – including EFTPOS (and previously ATMs), having cash stored on a gaming card (or available via other means – e.g., a debit card, credit card or digital wallet) is likely to increase the risk of harm to such gamblers.
- If gamblers struggle to track expenditure in gambling online, it is conceivable that a similar issue will occur in cashless gaming. However, due to the absence of cash, gamblers may not have an immediate reminder of their expenditure (unless they access their account).
- As pre-commitment trials show that gamblers will not access player activity statements, this highlights the need to ensure that gamblers are regularly exposed to such information.
- As research shows that tokens used in gambling lead to over-spending and money being de-valued, it is plausible that this same effect will occur with a cashless gaming card or ticket (as they are tokens).
- Research from the field of online gambling highlight that online gamblers universally agree that the cashless payment methods used in gambling (digital money) have increased their gambling expenditure and have tokenised gambling – a similar effect may also occur in land-based cashless gaming.
- Online gambling research highlights that deposit limits present some value to gamblers to help control their expenditure.

SECTION 4.
RECENT JURISDICTIONAL DEVELOPMENTS IN CASHLESS GAMING

Jurisdictional developments in cashless gaming

A number of recent international reports from gaming companies suggest that cashless gaming is becoming more popular around the world and this may in part be further accelerating due to COVID-19. However, a review of international jurisdictions highlights that few regulations have been designed to minimise the potential harms associated with cashless gaming. This is arguably also because the effects of cashless gaming are still largely unknown. However, a range of notable developments in the use and regulation of cashless gaming across the world are apparent and a few of the more interesting trends are described in this section of the report.

Cashless gaming developments in the US

ACS PlayOn, is a new casino technology that has been introduced in venues in California and Las Vegas, Nevada (Silverstein, 2019). It is a cashless system that allows a player to swipe a debit card at a table game and receive chips. The transaction takes place on a small handheld device positioned at the table. Players are handed the mobile unit and use it to request the amount they wish to receive, enter their PIN and on bank approval, are issued a receipt.

Allowing players to access money from their gaming position means that players can avoid getting up from a gaming table to access an ATM or a cashier's window. Its use has sparked debate over the impact on gamblers, especially those at risk for problem gambling.

Keith Whyte, Executive Director of the National Council on Problem Gambling (NCPG), reportedly stated that systems like PlayOn are designed to increase the time and money that gamblers spend at the table, and are inherently likely to negatively impact individuals with gambling problems (Whyte, 2020; Cited in Silverstein, 2019).

Whyte reportedly commented that 'increasing the speed of transactions and removing the break in play necessary to visit an ATM may facilitate the preoccupation, loss of control and loss chasing that is the hallmark of gambling addiction'.

In terms of protective measures, the PlayOn system only restricts players in their use of debit cards, but prohibits use of credit cards or the ability to overdraw accounts that incur debt. It also allows bank-imposed daily withdrawal limits. However, it uses point of sale transaction technology, which can provide more cash daily to an account holder than a traditional ATM bank card.

The NCPG has developed a set of Guidelines for Payment Processing that were approved in January 2020 (NCPG, 2020). The guidelines call on gambling operators and other stakeholders to use data they collect to monitor performance, encourage gamblers to set their own limits of time and money, deliver personalised responsible gambling messages, allow players to self-exclude, synchronise their exclusions with venue and state exclusion lists, research signs of problematic play, and develop models to help predict and prevent excessive usage.

The Nevada Gaming Control Board in January 2020 proposed a set of additional requirements to the technical standards for cashless wagering systems. These requirements state that:

> Debit card transactions must be executed in accordance with all state and federal electronic funds transfer requirements or wagering account transfer requirements, including receipting and fee disclosure requirements.
>
> Additionally, for electronic funds transfers, the cashless wagering system must have the following capabilities:
>
> (a) Provide for a configurable daily transfer limit, which must not exceed an amount per calendar day per debit instrument that is set by the gaming establishment;
>
> (b) Effective February 1, 2021, provide a means for a patron to select a daily transfer limit for the patron's debit instrument that may be less than the daily transfer limit set by the gaming establishment, and conspicuously display to the patron on the cashless wagering system, on the gaming device or at the gaming table where the cashless wagering system is accessible, or on a printed receipt given to the patron for the electronic funds transfer, notice that the patron has the right and ability to set such a limit; and
>
> (c) Conspicuously display on the cashless wagering system, on the gaming device or at the gaming table where the cashless wagering system is accessible, or on a printed receipt given to the patron for the electronic funds transfer, a responsible gambling message that includes the website of the Nevada Council on Problem Gambling and the toll-free telephone number of the National Council on Problem Gambling or similar entity approved by the Chair that provides information and referral services for problem gamblers.
>
> (Accessed in June 2020 from the Nevada Gaming Control Board website)

Interestingly, the daily limit of $1000 was removed from the original draft after the gaming provider, ACS submitted a petition to remove it.

A Californian tribal casino is reportedly looking to implement technology that allows customers to make electronic payments through their smartphones for slot play (Wargo, 2019).

Under the plan, a player utilises the resort's mobile app to load money onto a game. TribalNet CEO Mike Day reportedly stated that the advancement of e-wallet technology will be the next major cashless shift, moving past ticket in ticket out and bill validators into a true fully cashless solution.

The venue operator is reportedly working with several gaming equipment vendors in developing the mobile wallet. However, implementation of the technology is still subject to changes in California's regulatory rules.

The US$4 billion integrated resort, Resorts World Las Vegas, also introduced the first cashless casino on the Las Vegas strip including for both slots and table games. Patrons have access to digital wallets and cardless log-ins, with funds able to be transferred at either a kiosk, at services desks or via external accounts (e.g., bank, PayPal).

Cashless gaming developments in Sweden

Another interesting example of developments in cashless gaming is in Sweden. International Game Technology PLC announced in May 2020 the introduction of its cashless gaming technology IGTPay™ throughout the state-owned Svenska Spel venues in Sweden.

This technology enables players at VLTs to draw funds directly from their bank account through *Swish*, a widely used mobile payment service in Sweden. Players simply approve the transfer via their mobile device and following completion of gameplay, any available funds are returned directly back to the player's bank account automatically and instantaneously (Miller, 2020).

Sweden introduced new gambling legislation in 2018 which reflects some of the advances in gambling technology over recent years.

The Swedish gambling authority has also issued corresponding regulations and general advice for licence holders, which outlines the functional requirements for licence holders in relation to players.

These regulations include provisions such as:

- A player must be able to see their balance in the player account immediately after each completed transaction. There must be a function to show the player which games they have participated in, all the bets made and all the winnings paid out.
- There must be a function that can give the player warning messages regarding winnings and losses during the login session, as well as information on how long the player has been logged in.
- Only the player themself shall be able to set the limits.
- The gambling system must have a function that allows players to easily exclude themselves temporarily or permanently from a game.
- The gambling system must have a function checking for self-exclusion or restricted gambling every time a player registers or logs in to the gambling system.

(Accessed in June 2020 from the Swedish gambling authority website: www.spelinspektionen.se)

Cashless gaming developments in the UK

The Gambling Commission in the UK has provided a checklist for gaming operators to use when considering the introduction of new payment technologies in their venues. The Commission acknowledges that, while developments in payment technology were not foreseen when the Gambling Act 2005 and supporting regulations were drafted, the legislation does permit operators to innovate and make cashless forms of payment available. The legislation also provides some important measures, which aim to reduce the risks of customers spending more on gambling than they can afford, or exceeding their budgets for a gambling session.

In particular, operators must demonstrate that their payment solutions have been designed and made available with player protection measures. The Commission may consider taking regulatory action in individual cases, if an operator increased the risk of harm to its customers without providing appropriate mitigations.

The Commission states that operators may need to take account of specific risks such as the layout of their premises or vulnerabilities for particular customers. As part of their assessments, and subject to the provision of other suitable and effective alternatives for mitigating harm, it states that operators must consider how they can ensure that customers are required to take a break from gambling before they access and use new funds to continue gambling.

While the Commission states there is no evidence to suggest what the optimum duration of a break should be, wherever possible, the customer should at least be required to cease gambling at, and physically leave, the

machine, terminal or table at which they are situated, so as to provide some time away from the gambling before they are able to access and use new funds.

This is consistent with the mandatory conditions attached to all premises licences that any ATM is located in a place that requires customers to cease gambling and leave the gambling product in order to use it.

In any circumstance where customers might be able to access new gambling funds with only a limited or no physical break from the gambling product (for example, where customers might be able to use a debit card to replenish an app-based digital gambling 'wallet', or otherwise fund that wallet directly from their bank account), the operator must ensure that customers are provided a break from, or an interruption in, gambling before those funds can be used.

The purpose of the break in play is to reduce the risk of harm to players that could arise from their losing track of the time and money they have spent gambling.

The Commission suggests that a break or interruption in play could involve, for example, slowing the transactional process and providing delays before new funds are made available to the player; perhaps combined with informative messaging, so as to support the player's control and awareness of their gambling spend.

The Commission states that operators should use the new opportunities to support innovation in the protection and empowerment of consumers. For example, cashless payment technology may assist operators in tracking their customers' play, allowing them to collect better data on their customers' gambling behaviour and therefore helping to inform an assessment of those who may be at risk of gambling-related harm.

The new technologies may also assist in the provision of tailored responsible gambling information to customers, including transactional information on the sums of money they have spent or withdrawn, or the development of player-led controls to enable better self-management of the customer's gambling (e.g., allowing customers to set their own spend or withdrawal limits).

In respect of cashless gaming systems, the Commission expects that operators should be able to fully explain:

- How they will ensure that consumers are required to have a break from gambling before they are able to access and use new funds.
- How they will be compliant with the Gaming Machine (Circumstances of Use) Regulations (2007) in respect of the use of debit or credit cards, payment limits and committed payment limits.
- What anti-money laundering controls they have considered in designing their solution. For example, would a player be able to fund a gambling product via cash and then withdraw funds via an app or digital wallet?

The Commission requires operators to consider harm mitigation measures including questions such as:

- What information can your product provide to the consumer about their own gambling? For example, will consumers be able to access information on their transactional gambling history, such as their total gambling win and loss (or account deposit and spend) over certain periods of time?
- Are you able to provide tools that enable the user to manage their gambling? For example, can the consumer use the product to set limits on the amount of money they are able to deposit or spend over a certain period of time? Is there a range of limits available?
- What alerts would be triggered when a limit is reached? How will the limit-setting be made effective in terms of reducing the risk of gambling-related harm?
- Does the product allow for users to voluntarily stop themselves from using the product for gambling purposes for a period of time? Or provide a period of cooling off whereby the product cannot be used for gambling for a certain period of time after limits have been amended by the consumer?
- Does your solution enable you or a gambling operator to monitor customer behaviour (e.g., the gambling spend or intensity of an individual customer) over a period of time?

(Accessed in June 2020 from the UK Gambling Commission website)

Push for cashless gambling due to COVID-19

There are a number of recent international developments in cashless gaming that have been expedited as a result of the COVID-19 pandemic.

COVID-19 related developments in the US

For example, the American casino industry has called for gambling regulators to make it easier to adopt cashless payment transactions on the casino floor to help customers avoid handling money during the coronavirus outbreak (Parry, 2020).

So far, there has not been widespread adoption of digital payments at casinos or other gambling facilities in the US, which is reportedly due to several factors including limits imposed by state legislators or gambling regulators.

Presently, only a small number of casinos use such payments, which include debit or credit cards, as well as apps like Apple Pay, Google Pay, and PayPal.

In a report released in June 2020, the American Gaming Association called on regulators in states where gambling is allowed to update their rules or laws to integrate cashless options for gamblers.

The Nevada Gaming Commission has a hearing scheduled for June 25, 2020 where it is expected they will accept the state Gaming Control Board's recommendation for amendments to state regulations that would streamline the approval and testing process for modern payment methods.

COVID-19 related developments in Canada

Another example of the push towards cashless gambling due to COVID-19 is in Canada. As at 12 June 2020, Alberta was the only province in Canada allowed to re-open casinos. The government of Alberta outlined guidelines for businesses to meet in order to help reduce the risk of COVID-19 spread.

The 'COVID-19 Guidance for Casinos and Racing Entertainment Centres' states that venues should use contactless payment/payout and avoid cash payments/payouts where possible (Alberta Gaming, Liquor & Cannabis). Regulations to mitigate the possible negative impacts on gamblers relating to contactless payments, however, have not been published at the time of the review.

Although not COVID-19 related, the Union of British Columbia Municipalities (UBCM) delegates in Canada recently voted that the provincial government should move casinos to cashless gaming to cut money laundering. The approved resolution requested the government to take immediate steps to address money laundering in casinos and to undertake an evaluation of cashless gaming systems, whereby account-based card technologies are used to verify player identity and track gambling transactions on all gaming devices (Hainsworth, 2019).

COVID-19 related developments in Sweden

The Government of Sweden (2020) has introduced temporary responsible gambling measures in response to the increased risk of gambling during the COVID-19 pandemic. It states that the increased risk of unemployment, sick leave and financial uncertainty can increase the risk of mental ill health as well as gambling and financial problems.

The ordinance adopted on 15 June 2020 contains temporary provisions stating that the deposit limit for gambling on online casinos may not exceed ~$777 AUD. A corresponding loss limit will apply when gambling on slot machines. It will also be mandatory for players to set limits on gambling time when gambling on online casinos and slot machines, and bonuses offered by licence holders operating online casinos and slot machines may not exceed ~$15 AUD.

The temporary ordinance will come into effect on 2 July 2020 and expire at the end of 2020.

COVID-19 related developments in Finland

The Finnish Ministry of the Interior has additionally issued a decree significantly reducing monthly and weekly loss limits for online casino offered by Veikkaus (Finland's state-owned gambling operator), while Veikkaus has announced that lottery draws will be suspended until further notice (iGB, 2020).

The decree states that the monthly loss limit for 'fast-paced online games' will be reduced from ~$3277 AUD to ~$819 AUD as a result of the 'exceptional circumstances' of the COVID-19 pandemic.

The maximum daily loss per player has been halved from ~$1,639 AUD to ~$819 AUD, meaning that an individual would be unable to gamble for the rest of the month should they lose the maximum in a day.

This will apply to online slots, online bingo, instant win games and table games, excluding poker, coming into force from 1 May and in place until 30 September (accessed in June 2020 from Finland's Ministry of the Interior website).

Recent developments in Australia

As of August 2021, there is a trial underway of cashless gaming in Newcastle. This trial is supported by the NSW Government and will test cashless gaming in a club called Wests Newcastle (led by Aristocrat Gaming).

Conclusion

Findings of this brief review of jurisdictional developments in cashless gaming highlight that, while many jurisdictions are considering cashless gaming, few clear regulations have been developed. However, it is clear from this review that COVID-19 may be accelerating the transformation of traditional gambling into cashless gaming.

As the COVID-19 pandemic was only in relatively early stages at the time of this review, this may account for why regulatory parameters for cashless gaming have not been widely published. Accordingly, this should be particularly monitored over the coming 12 months when many of these may be developed.

What does this tell us?

In summary, research highlights that:

- Debit cards are being used in the US to play casino table games. As such systems do not require players to break play to access cash, they have been identified as having the potential to harm gamblers.
- Point of sale transaction payments in gambling that provide more cash than a traditional ATM have been identified as having potential to harm gamblers.
- A Californian tribal casino is looking at use of smart phones with e-wallets and apps for gambling payments.
- In Sweden, the Swish mobile payment system will allow gamblers to pay for gambling with debit cards (Players approve the transfer via their mobile device).
- In relation to cashless payment methods, the UK Gambling Commission requires that gamblers take a break from gambling before they access new funds. This is also seen as important for consistency with ATM regulations.
- The Commission also highlights that one example of a break in play could involve slowing the transactional process and providing delays before new funds are made available to gamblers and providing informative messaging to support the gambler's control and awareness of their gambling spend.
- There is some early evidence from internet scans that COVID-19 may be increasing industry interest in cashless gaming.
- Due to concern over the major economic crisis resulting from COVID-19, regulators such as Sweden and Finland have reduced gambling limits to protect the population from gambling harm. This also highlight the dire risk that the COVID-19 economic crisis may pose to gamblers.

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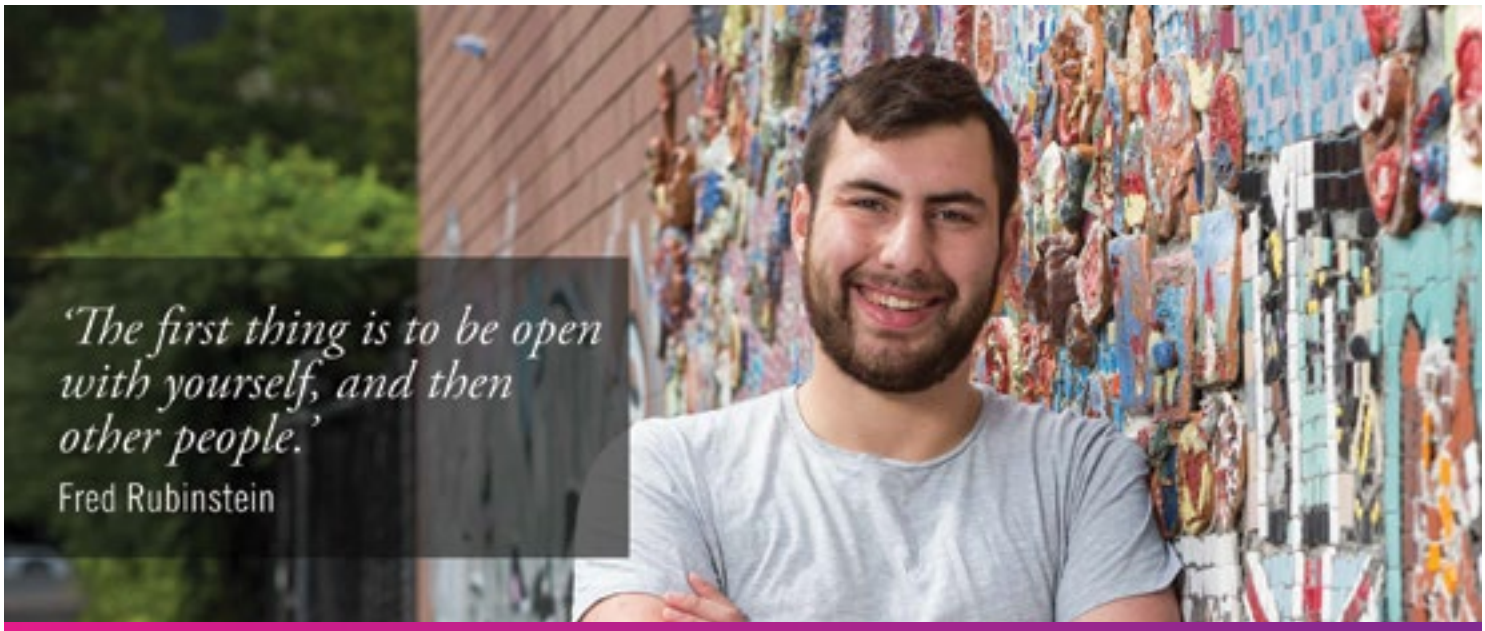

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