Abstract

Central Bank Digital Currency (CBDC) has become increasingly popular product amongst central banks of the world. Bank of England has published survey data responses about payment methods among consumers and SMEs. The purpose of this paper is to consult if the possible demand for UK's CBDC would justify its creation using the survey data.

Due to the nature of the data, I used purely qualitative approach to reviewed data on the payment methods for consumers and SMEs. Selecting only applicable data points together with limited research available on CBDCs in the world economy, I was unable to arrive and a definite answer. However, I do believe, that the possible value created by the continuation of design stage of Digital Pound (UK CBDC) can be justification enough to at least carry on researching it.

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Introduction

The constant innovation in technology and reduced cash reliance has accelerated the research into CBDC (Stanley, 2022). With 93% of the central banks engaging in some form of CBDC research with greater focus on retail CBDC in 2022 (Kosse, 2023). Bank of England (BoE) is no exception, they are researching a possibility of creating a Digital Pound (D£), which has the potential to yield welfare improvements in UK.

Before discussing D£, I believe it is important to make the distinction between cryptocurrency, stablecoin and CBDC. In its simplest form cryptocurrency is a decentralized and unbacked digital currency (e.g. Bitcoin), stable coin is also decentralized but it is fiat-backed digital currency (e.g. USD coin), finally, the topic of this paper CBDC is centralised and fiat-backed digital currency (e.g. Sand Dollar) (Waliczek, 2023). Additionally, this paper focuses on Retail CBDC, used by households and SMEs for small and medium volume transactions. Wholesale CBDC, on the other hand, focuses on high-value transactions and acts as a substitute for the central bank reserve used by high-value businesses.

The purpose of this paper is to consult, if the possible demand for retail D£ would justify its creation. Since there is little historical or theoretical data regarding CBDCs in general, this will be highly speculative research.

The first section is a literature review, includes some four examples of launched CBDCs and their reasons for failure. This section also includes some information that was found by the BoE consultations so far together with limited literature about the topic. Second section is identification, description, and evaluation of relevant data point in the survey responses assessed qualitatively and related to key areas of D£. Third section presents the findings from the survey assessment and evaluating main characteristics D£ should focus on most if it was to be created. Finally, I conclude answering the question and stating possible further research.

Literature Review

There is relatively little research on CBDC and most of it is based on predictions and assumptions since currently there are only 4 launched CBDCs and the oldest one was only launched in 2020, and so far, neither has experienced much success.

Launched CBDC

CBDC is not a new concept however, since similar ideas have been proposed in 1987 by James Tobin, who proposed "deposited currency" which would be provided by the government offering "the convenience of deposits and the safety of currency", he was trying to provide reasons and solution to reduce the reliance on deposit insurance (Tobin, 1987). Additionally, in 1993 'Avant smart card' which was essentially the first CBDC, introduced by the Bank of Finland (Stanley, 2022). However, it was discontinued in 2006 since "it was never very popular, because it was annoying and expensive to use - and plain credit cards were just better" (Gerard, 2020). This was a lesson for the future CBDCs, that consumers need to want to use the CBDC, hence marketing campaigns should prove useful. Additional and more recent proof of the need for marketing when releasing a CBDC is Eastern Caribbean DCash launched in 2021 and a slow uptake so far, "largely due to the lack of marketing and public awareness" (IMF, 2022).

Currently, only 4 CBDCs in Bahamas, Jamaica, Nigeria, and Eastern Caribbean have been released. Nigerian 'eNaira' and Jamaican 'Jam-Dex' were both introduced to improve the financial inclusion in their countries (Abiodun, 2023; Muir, 2023) and each had its own issues. eNaira was seen as a breach of privacy by the government due to its centralized nature and was seen as giving too much power to the government, resulting in little demand for eNaira (Rawat, 2023). Jam-Dex had the issue with the lack of infrastructure, leading to extremely low transaction share, people who owned it "had nowhere to spend it" (Muir, 2023). Looking at these 3 examples (including DCash), BoE needs to ensure that before launching the digital pound, ensure the public is aware and educated about D£, there is infrastructure to utilise it and that privacy of the users is maintained outside of the government institutions. Finally, Bahama's 'Sand Dollar' released in 2020, the only CBDC released by a developed country. Like other CBDCs, reason for creating it was financial inclusion, however, it was not successful. It was extremely slow to be adopted, primarily because the goal was poorly set. Financial exclusion, by international

standards, is not a significant issue. Hence setting a well-reasoned and evaluated goal is key for a CBDC to succeed (Walker, 2022).

Commercial Banks and CBDC

There are possible negative effects a CBDC can have. Arguably the biggest would-be disintermediation of commercial banks through deposit drain. BoE is aware and is consulting on and researching ways to mitigate this issue. The current proposal is putting limits on the amount of D£ held per user and SME, which would control the withdrawal of deposits if scenario of D£ having high demand. The limits would be present on introduction of D£ to ensure controlled environment on launch and adjusted limits during the times of financial stress (BoE, 2023a).

The lower deposits that could result from D£, could lead to and increase in price of credit provided by the commercial banks, since they would have to turn to the more costly wholesale funding market which might result in the additional cost being pushed onto the end-users. However, if 20% of deposits were switched to D£, the increase in lending rates was "estimated to rise by around 20 basis points" (BoE, 2023a). Additionally, the improved ease of switching from bank deposits to risk-free alternative (D£), could lead to more frequent inflows and outflows of deposits resulting in the bank's need to invest in more liquid assets which may result in lower ratio of commercial banks' funds being available for long-term investments (e.g. reduction in SME investment project lending), finally resulting in "slow productivity growth" (BoE, 2023a).

Rhys Bidder (2024) has conducted research on German households, where they wanted to "examine the impact of a CBDC on banks and broader economy". Due to the lack of historical data on CBDCs, they try to predict likelihood of German household to hold digital euro (D€) in times of stability and stress by modelling survey responses. They classify "slow disintermediation" which is small substitution of holdings to D€ during stable times; and "fast disintermediation" which is large substitution to D€ during unstable times. They found that slow disintermediation of highly leveraged "fragile banking system", could be beneficial to financial stability and welfare, however, fast disintermediation could result in higher bank-run risk and hence would negatively impact welfare from D€. They also reasoned that introduction of limits to the D€ would

allow to maintain the welfare gains from slow, while reducing the harm of fast disintermediation, "yielding welfare gains overall". Overall, the study succeeds in what it was set out to research, however, it has limited generalization of findings since the survey was based on German households.

Trust and CBDC

Bidder (2024) have also arrived at the conclusion that "trust" is a key factor within the population when deciding to switch to CBDC. That is both, trust in commercial banks and the government. This was also implied with eNaira.

BoE has also found that trust is a factor, since several responses to the consultation paper were against the government or BoE being able to access personal data. BoE has committed to introduce a legislation preventing BoE and Government from accessing users' personal data to ensure trust in the D£. However, D£ would not be "anonymous", to prevent financial crime there would still need to be an authority to oversee users' spending. BoE has proposed to put this on the Payment Interface Providers (PIPs) and External Service Interface Providers (ESIPs), where a private regulated provider would oversee the data of customers like a commercial bank would (BoE, 2023a).

Inclusion, CBDC and Cash

One of the principals behind introducing D£ is financial inclusion, even though it is already high in UK with already operating projects dedicated to enhancing it, "D£ could complement existing initiatives". Through digital literacy education campaigns, offline payment systems and tackling issues with existing financial exclusion, working with specialist and civil societies, BoE is dedicated to finding ways to ensure D£ would assist with this issue (BoE, 2023b).

BoE has promised to continue "to safeguard the access to cash, given the vital role it plays for individuals and in communities" (BoE, 2023b). The reasons for people's demand for cash vary between digital fraud concern, privacy, spending awareness, convenience, access to technology, budgeting and general mistrust of card payments and technology (Hall, 2022)

D£ would complement and not replace cash, yet some stressed that the existence of such digital substitute could "accelerate the decline of cash" (BoE, 2023b). Hall (2022) report also recommends that for financial inclusion, regulators propose motives and innovations for SMEs to ensure the viability of cash "in July 2020, 42% of people had visited a shop that did not accept cash" (Hall, 2022). LINK (2023) annual report states that, in 2021, 15% of all payments were paid in cash and it only increased in 2023 to 19% as stated by the BRC (2023) survey. Therefore, improving the regulatory schemes for cash may be a better option for improving financial inclusion than a D£, however it would need to research further.

Demand for CBDC

Bidder (2024), during their research also concluded that there is "substantial demand for CBDC, with that demand likely to lead to substitution away from other forms of money – partly cash, but especially out of bank deposits".

Jiaqi Li (2022), conducted a study for predicting demand for CBDC using survey data from Canadian households. The research provided where the demand would be driven from. Through structural analysis, it examines possible substitution effects of CBDC for cash and bank deposits and finds a disproportionate demand to be from bank deposits rather than cash. They also found that increased use of financial technologies, technologies overall and data-driven approaches in finance are factors driving the demand for CBDCs, through which improvement in payment efficiency, transaction costs and financial inclusion can be achieved. Limitation of this study is inability to generalize the finding to UK, due to using only Canadian households.

Literature Summary

In summary, the literature provides factors to consider when commenting on D£ design and whether to recommend its launch. While there is data concerning CBDC, its predictive power on D£ would be limited by due to regional discrepancy, since majority of research was based on non-UK data. Contrarily, results from variety of data regions, have similarities, which could indicate their validity for application to D£.

Methodology

YouGov, on behalf of BoE, have carried out a survey on payment methods (PM) by the UK consumers and SMEs. There were 25 questions directed at consumer and 15 questions directed at SMEs. All the questions (Q) for consumers and SMEs and data on responses can be accessed in "accompanying data files" on the BoE website 'The digital pound: A new form of money for households and businesses?' (BoE, 2023). To account for under or overrepresented demographic, YouGov "weights" to the respondents' answers to account for "discrepancy between our panel and general population" (underrepresented get more weight and vice versa) (Paczkowska, 2023). To present more accurate results, I will be using the total weighted data for my discussion. Due to the limited word count, I will include response data, for what I believe to be most relevant questions.

Consumer Data

Starting with the Consumer characteristics (full list can be found in **Appendix 1**).

- **Age** – 55+ year olds who took this survey make up 42%. This could skew the results into 'Cash dependents' side, since older segment of the population have strong preference to cash and on average less technological knowledge (RSA, 2022).
- **Disability** – survey shows that 30% have some sort of disability limiting them.
- **Internet Usage** – 91% use internet daily, however, 5% never use it. Looking closer, 81% of the people who never use internet (*Chart_1*), were from 55+ age category, further proving that it is a significant factor. Therefore, proposed offline capabilities would be key for D£ to attract consumer not using the internet. So, together with 'age' and 'disability', we can use this data point as proof for the need of 'inclusiveness and attractiveness' design criteria (BoE, 2023b).

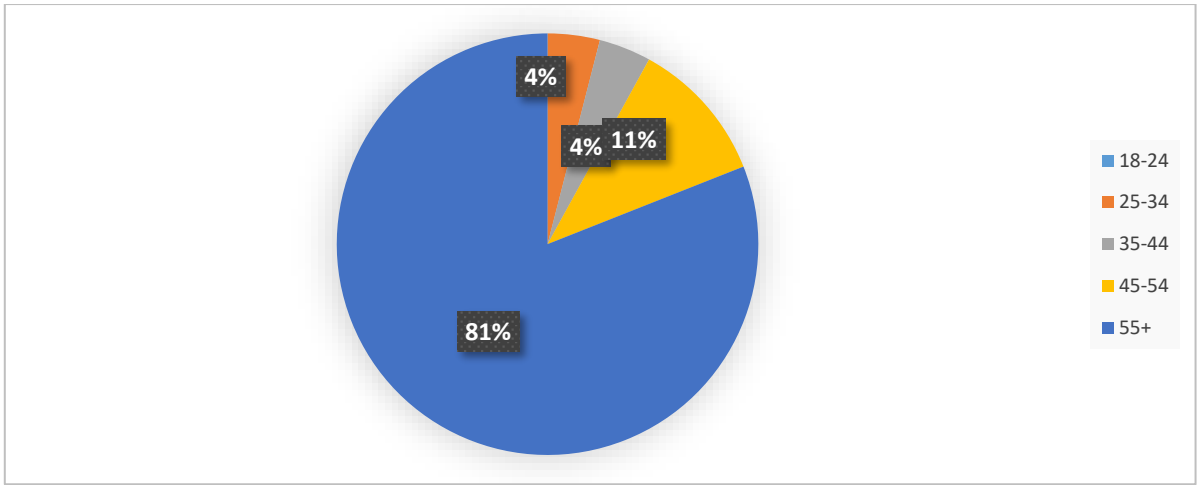


Chart_1: 'Ages that Never Use Internet'.

- **Number of Bank Accounts** – 75% hold at least 2 bank accounts and 43% hold at least 3, this could indicate likelihood for consumer adding D£ to their portfolio (more accounts more likely to make another one).
- **Online Banking Usage** – 86% use online banking often, 7% sometimes and 7% never use it. Again, now referring to *Chart_2*, out of the respondents who never use online banking 75%, were in 55+ age category, linking back to inclusion.

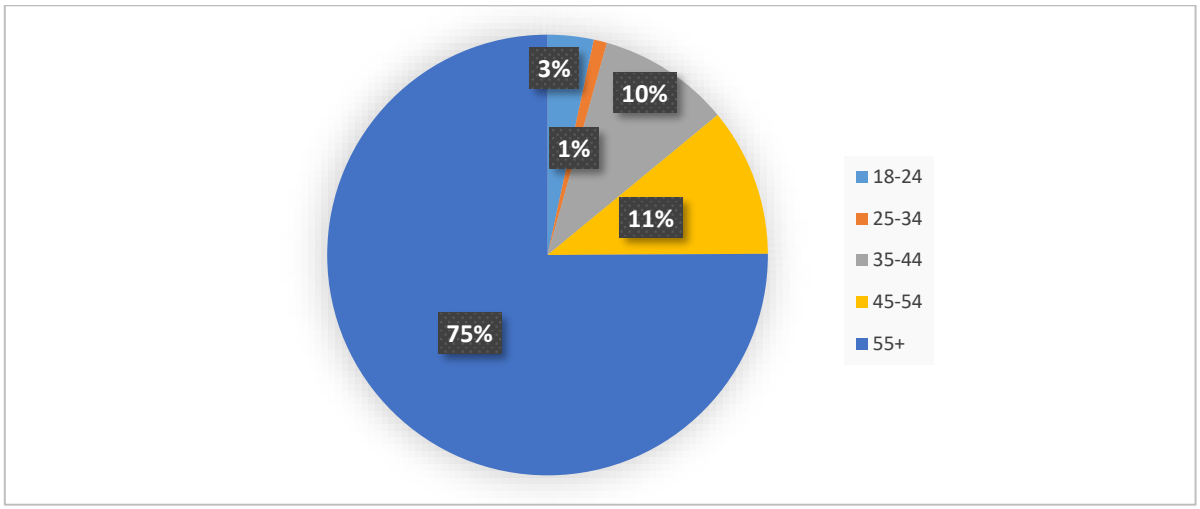


Chart_2: 'Ages that Never Use Online Banking'.

- **Financial Confidence** – 20% of the respondents are lacking confidence, which could indicate the need for D£ to be 'interoperable', another design criteria of BoE (BoE, 2023b).
- **Age finished Full-Time Education** – This characteristic together with 'internet usage', 'online banking usage' and 'financial confidence' could be good indicators for the need of education campaigns proposed by BoE to be carried out, which would benefit the consumers whether D£ would be introduced or not, improving

inclusion and interoperability (BoE, 2023b). *Chart_3* reinforces importance of education campaigns, since 38% (highest percentage) of financially confident respondents have finished their full-time education at 20+ (likely signifying level 6 or higher education).

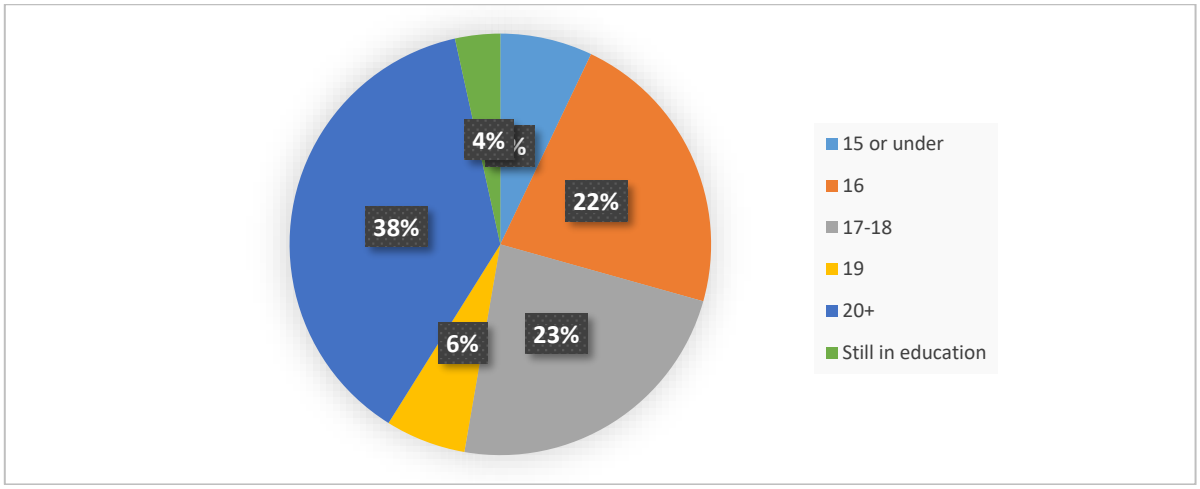


Chart_3: 'Financial Confident based on Years of education'.

Overall Usage Behaviour

Q6 shows while majority of payments are made in digital manner, there is a significant amount made in cash (*Chart_4*). However, Q7 and 13 show cash is least used manner of saving (2%) (*Chart_5-6*). Therefore, cash is preferred for payments rather than saving, which is preferred for D£ since it could indicate consumers using it for payments, not saving which could cause unwanted bank disintermediation. Significant number of respondents use current accounts (CA) to save instead of savings accounts (SA). This could indicate that consumers just want a digital account to hold their funds, without the need for interest accumulation, which could indicate that D£, being a risk-free debit account, could attract such consumers to use it for saving. This would not be ideal, due to disintermediation of commercial banks, so proposed limits on D£ accounts would be key to control financial stability if D£ was introduced (BoE, 2023a).

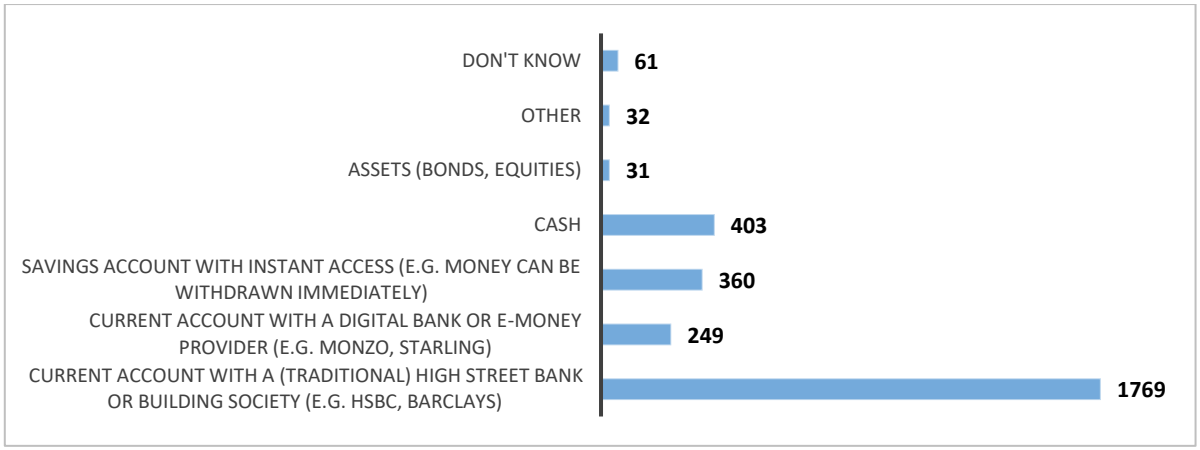


Chart_4: 'Q6. From which of the following places do you currently access money to use for your usual day-to-day spending?'.

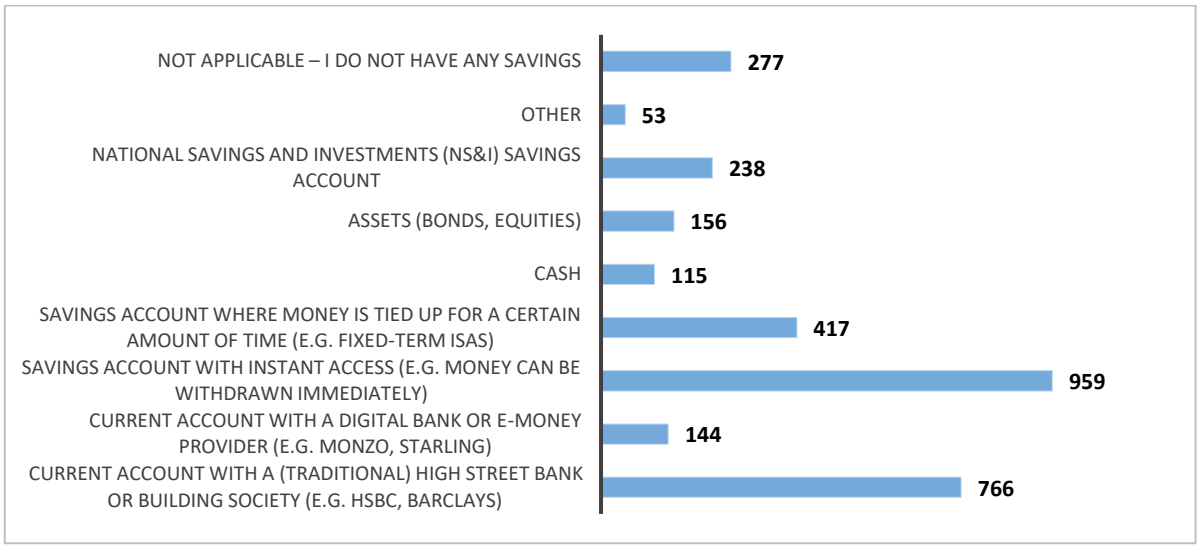


Chart_5: 'Q7. And which of the following, if any, do you currently use for saving money?'.

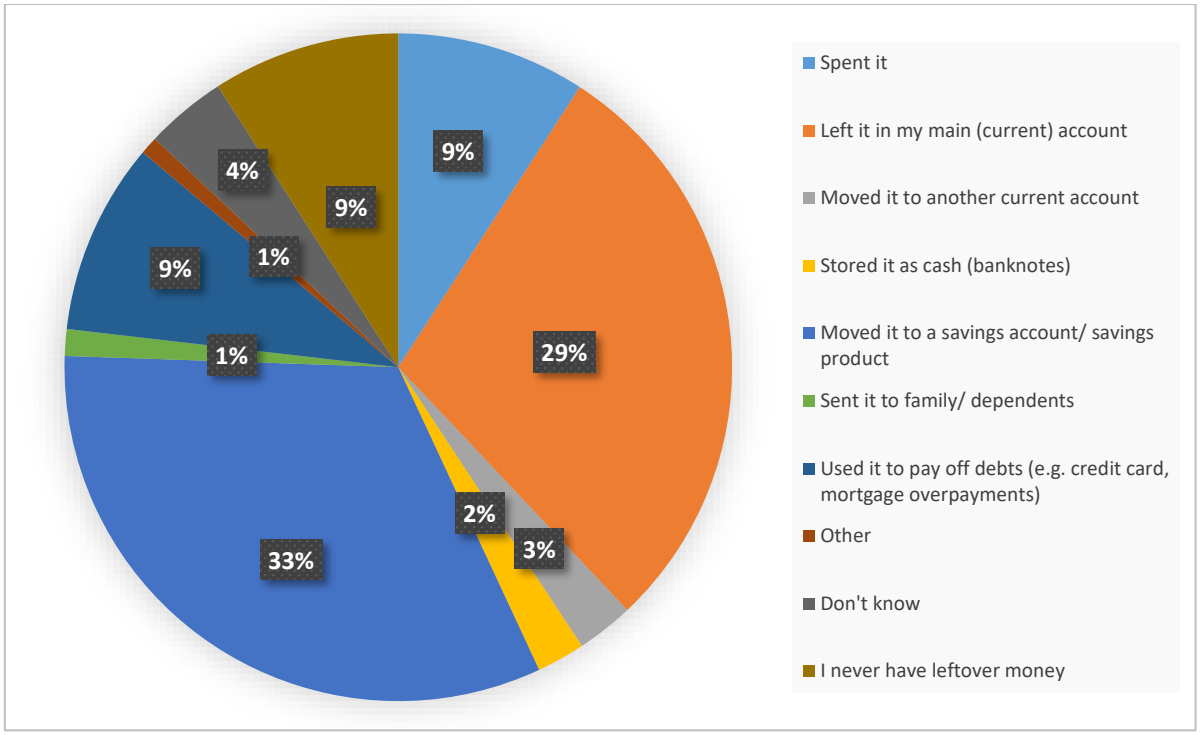


Chart_6: 'Q13. Thinking about the last time you had some money left over after being paid (and after essential items), what did you do with most of that that extra money?'.

Q10 asks about the CA, while Q11 about the SA factors influencing account choice for consumers. The responses to both questions are similar, so I will discuss them together.

- **Interest Rates** – for both CA and SA, interest rate is a key factor, with 68% and 87%, respectively, considering it important (*Chart_7*). It was expected for CA to value it less than SA, since it normally doesn't have any interest rates and is used for daily transactions rather than saving. This could indicate that D£ does not need remuneration or interest rate applied to it just like suggested by BoE (BoE, 2024a).

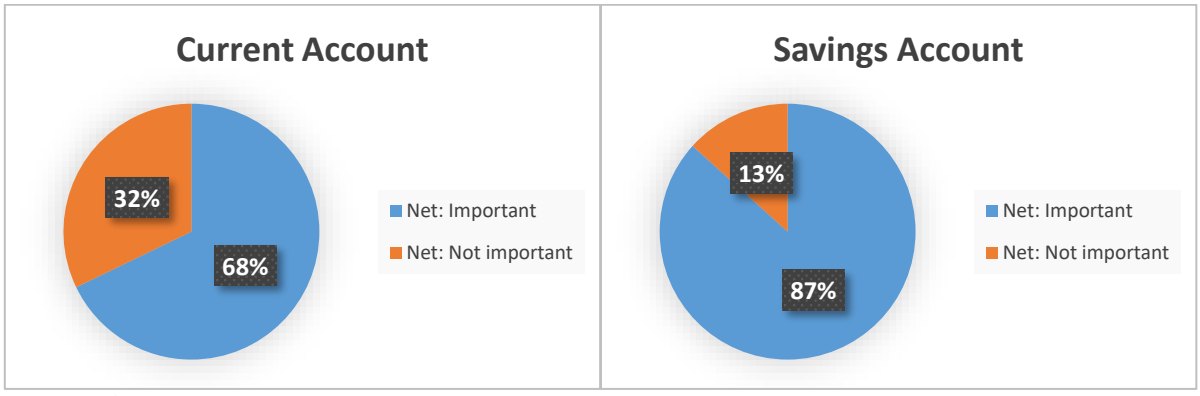


Chart_7: 'Interest Rates'.

- **Safety** – for both CA and SA choices, trust in the provider is a key factor, with 94% and 95% of respondents, respectively, considering it important (*Chart_8*). This

coincides with another design criteria of D£ 'reliable and secure', proving the need for the criteria to be considered.

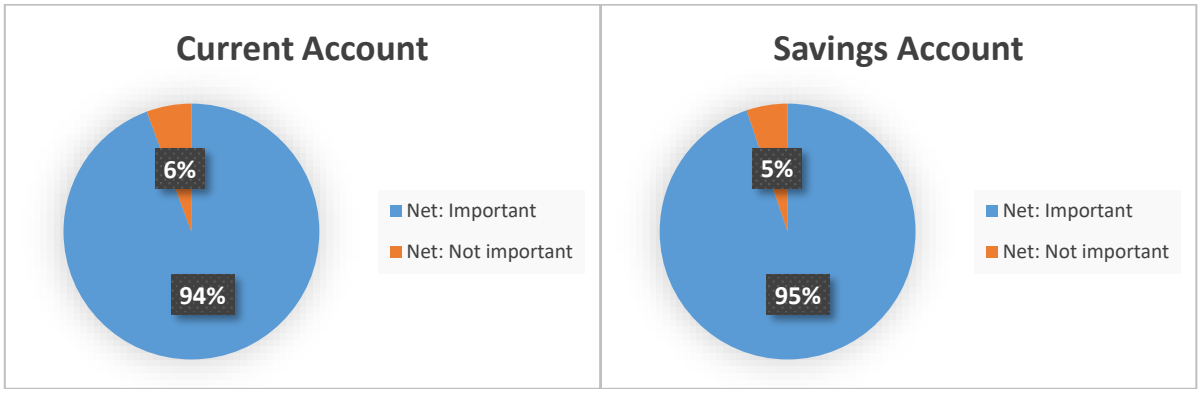


Chart_8: 'Safety – how much you trust the provider to keep your money safe'.

- **Privacy** – for both CA and SA choices, personal data privacy is a key factor, with 92% and 93%, respectively, considering it important (*Chart_9*). This indicated the need for design criteria 'user privacy and control' (control refers to users' ability to know and decide what data they share) (BoE, 2023b).

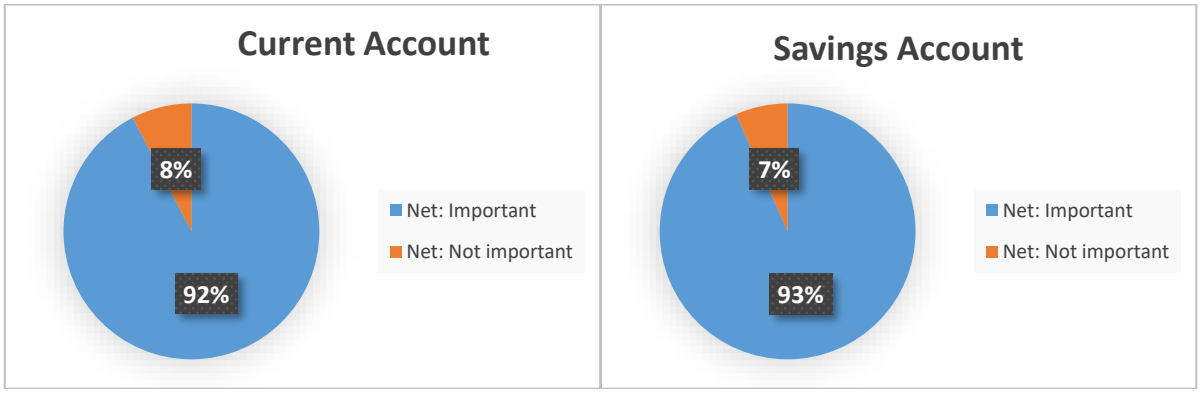


Chart_9: 'Privacy – how safe and secure your personal details feel'.

- **Convenience** - for both CA and SA choice, ease of use and accessibility are key factors, with 95% and 94%, respectively, considering it important (*Chart_10*). This links back to inclusiveness, attractiveness, and interoperability design principles.

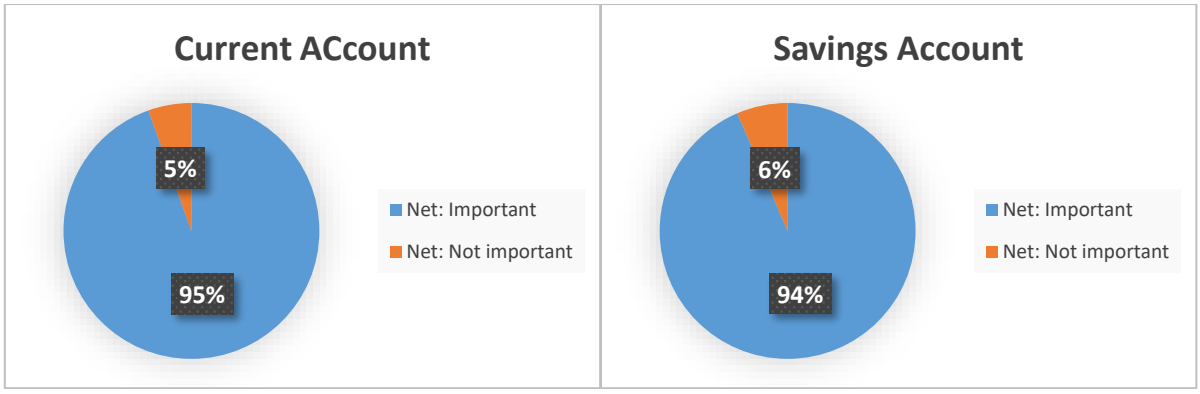


Chart_10: 'Convenience - how easy it is to access and use'.

- **Customer services** – for both CA and SA choice, customer support is a key factor, with 95% and 94, respectively, considering it important (*Chart_11*). Links to the need for interoperability and reliability.

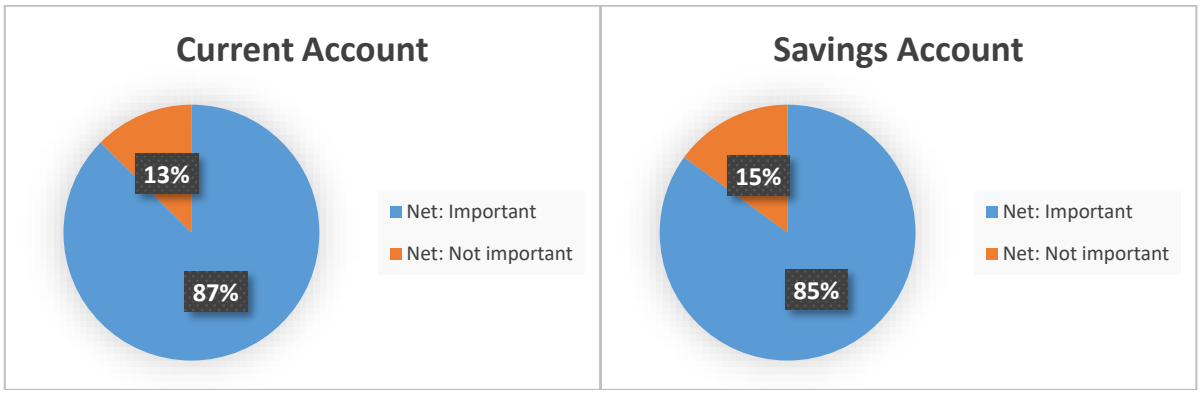


Chart_11: 'Customer services'.

Q16 shows 69% pay using a debit card, 18% using a credit car and 7% using cash (*Chart_13*). Higher usage of debit than credit, could signify higher chance for using the D£ due to similarity. However, only 13% of debit payments are made using a smartphone. This could be an additional reason for a physical card for D£ improving inclusiveness. Q17 shows 48% use debit cards, 26% credit cards and 20% PayPal (*Chart_12*). PayPal could represent attractiveness of PIPs, since they would function similarly to PayPal rather than bank accounts.

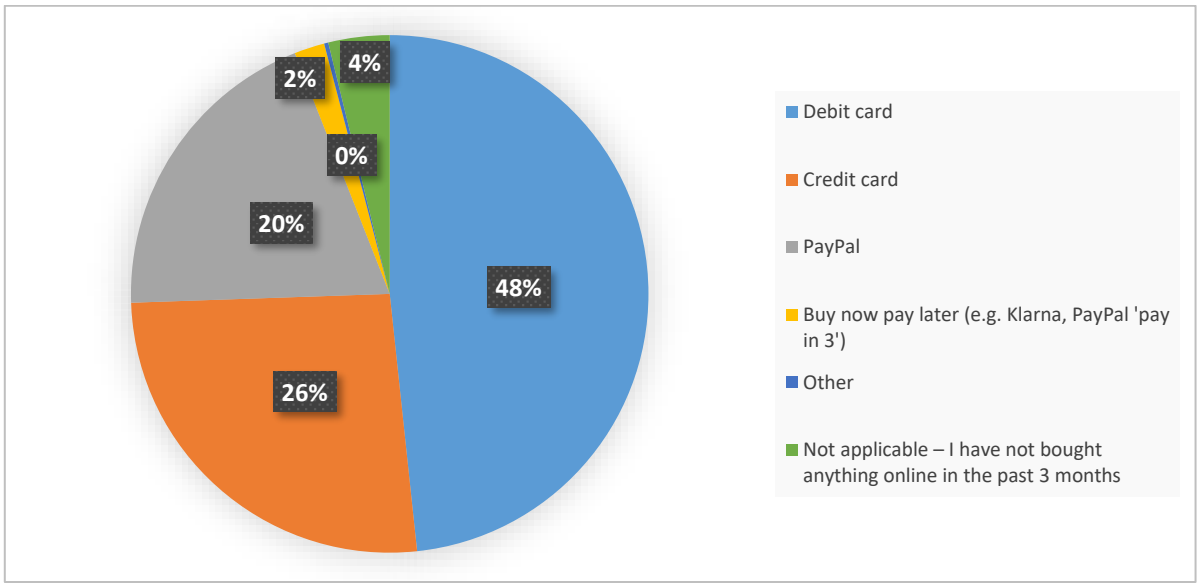


Chart_12: 'Q17. And thinking about when you have bought something online in the last 3 months, which of the following payment methods do you use most commonly?'.

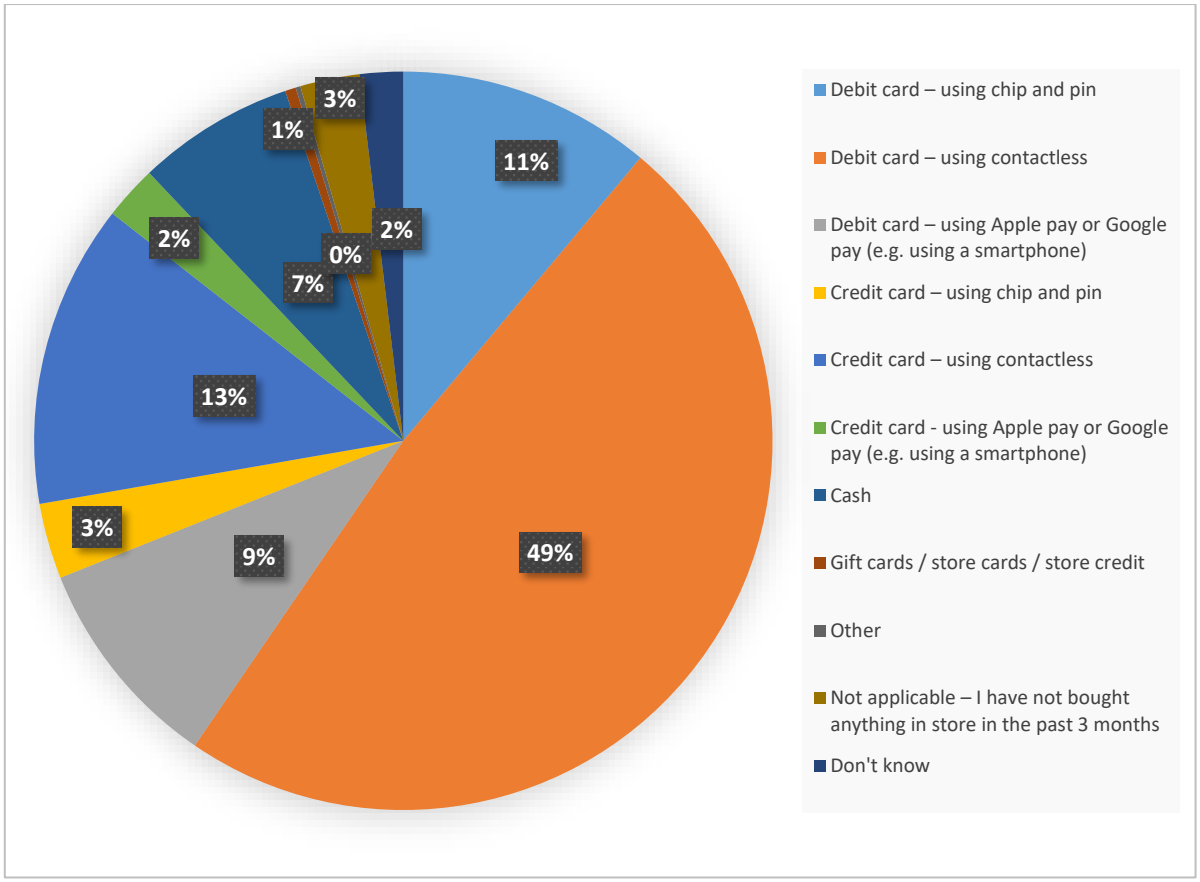
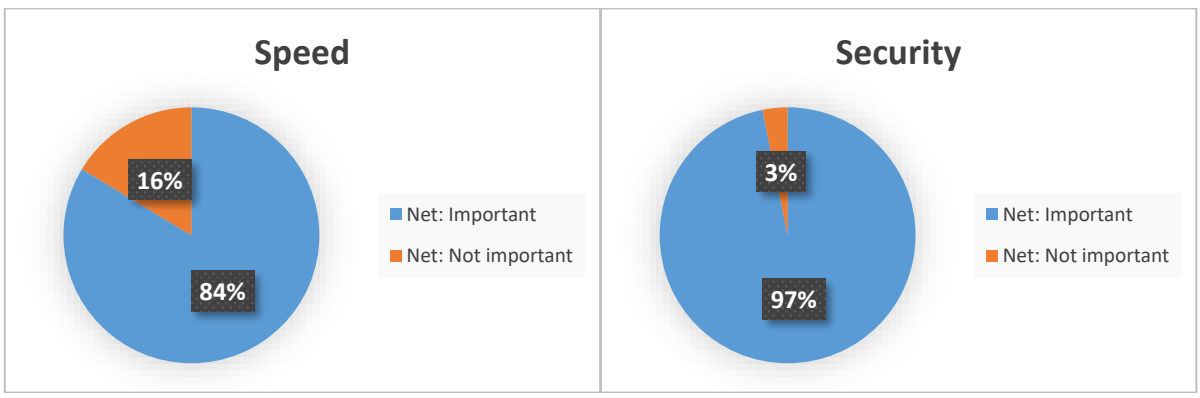


Chart_13: 'Q16. Thinking about your purchases in-store in the last 3 months, which of the following payment methods do you use most commonly?'.

Q21 asks about importance of factor for online purchase (*Chart_14*). High importance placed on speed could indicate the design principle of 'innovation', improving transitions speeds and efficiency. Security, 97% importance, links back to security being key design principle. Convenience, availability, and familiarity are factors concerning easy of use and accessibility for the user all having importance above 80% suggests the need for attractiveness, reliability, and adoptability design criteria (BoE, 2023b).



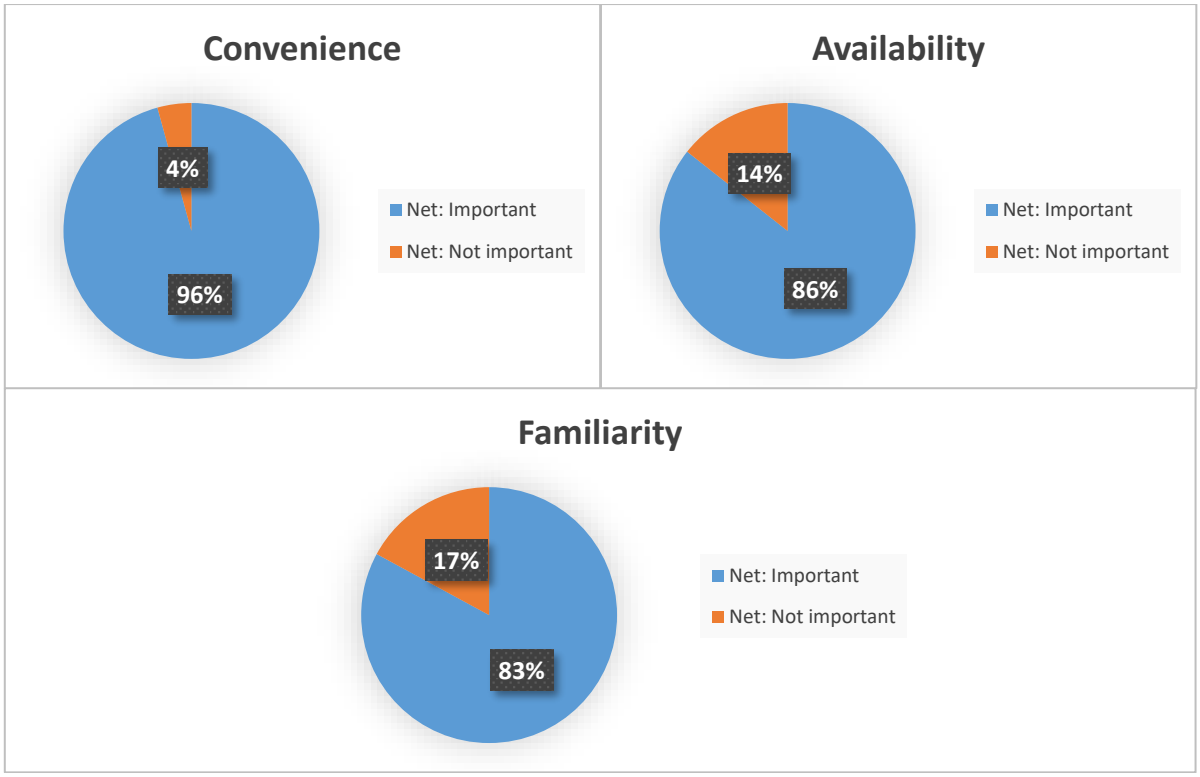


Chart_14: 'Important Factors for Choosing Online Payment Methods'.

Q22 shows 'additional cost' to the PM causes most frustration (665 responses), while average of 450 responses were allocated to availability (link to adaptability of D£ into existing infrastructure), security, reliability, and transparency each (*Chart_15*). This would need to be considered by PIPs when designing the wallets (since consumers dislike additional costs).

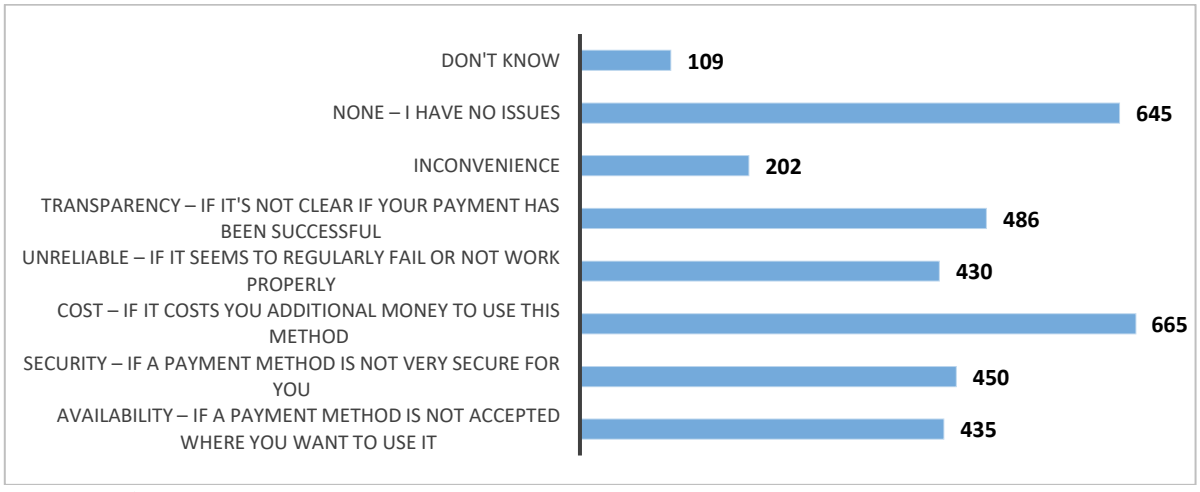


Chart_15: 'Q22. Which of these factors, if any, have caused the most frustration when paying for things?'.

Q25 shows bank transfer having an absolute majority use for P2P compared to other methods, but Cash and PayPal are noteworthy (*Chart_16*). *Chart_17* shows reasons for mentioned methods. Bank transfer from main or secondary account and PayPal are used for the same reasons and, therefore, link to design criteria of online payments reviewed in *Chart_14*. Cash is different, there is an increase in 'other', which could be its non-traceable nature, additionally, respondents put significant value to the physical aspect of cash. Which proves the need for D£ to be released alongside cash, rather than replace it (BoE, 2023a). Rest of reasons for cash use are like bank transfer and have same design criteria considerations.

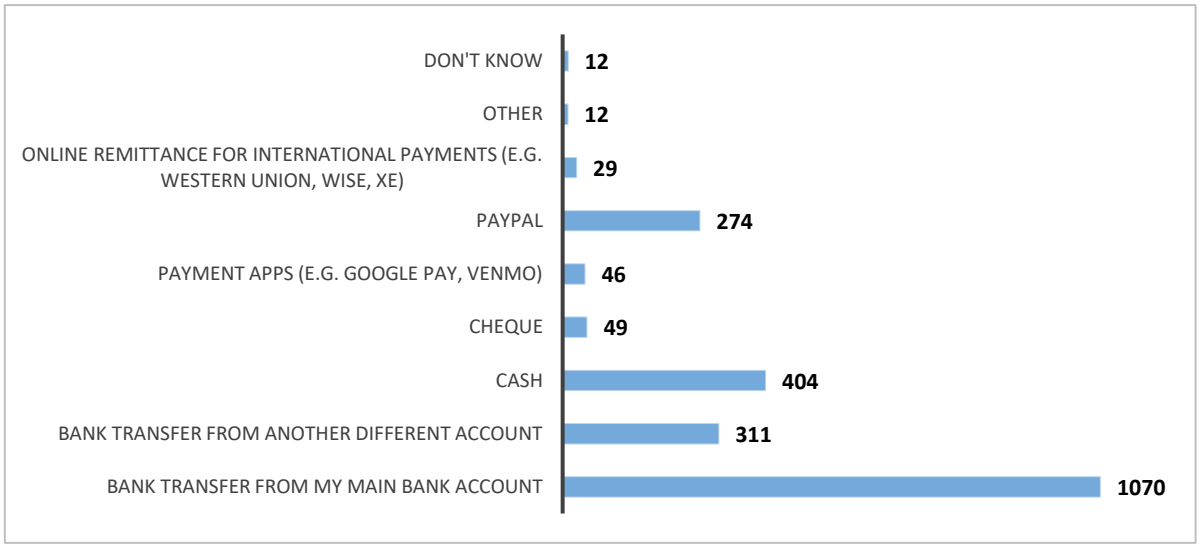
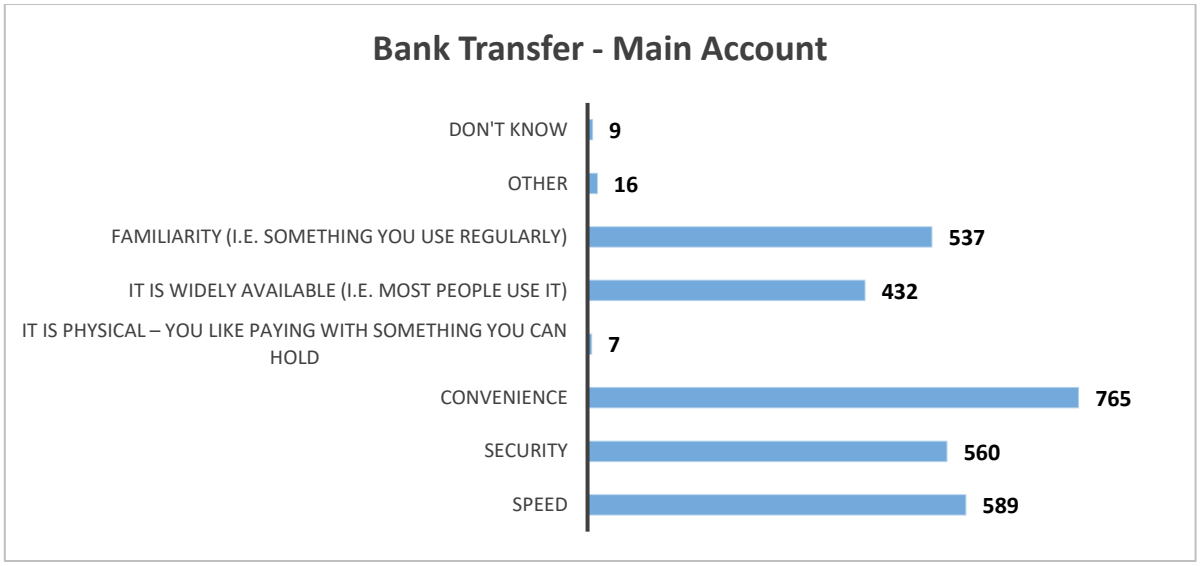


Chart_16: 'Q25. What payment methods do you predominantly use for person-to-person payments?'.



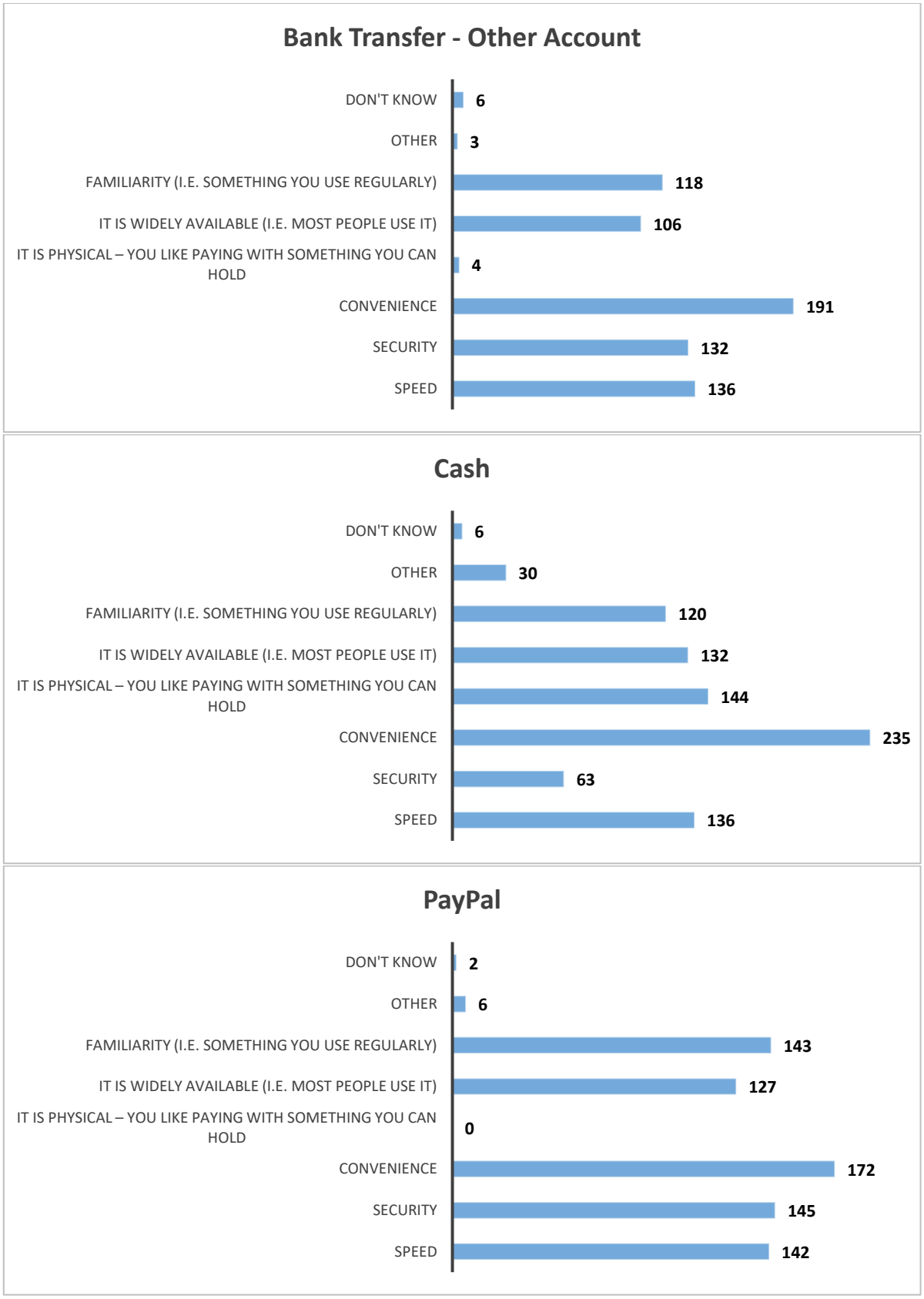


Chart_17: 'Reasons for using most used payment methods'.

Importance of Cash

While digital payment makes up most transactions (*Charts 4, 13, 18*) as well as savings (*Charts 5, 6)* cash is still used. *Chart_18* shows the responses to question 27, on the frequency of cash use ,38% using cash at least once a week, and 6% using it daily.

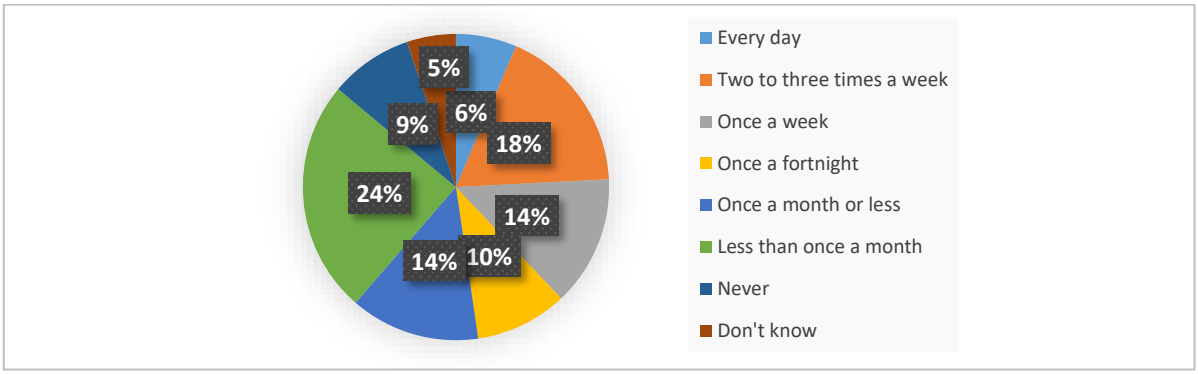
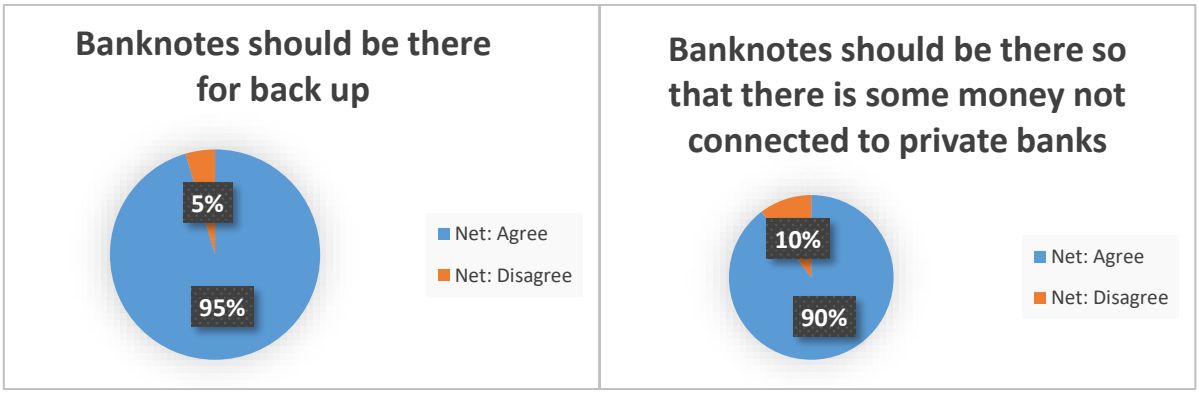


Chart_18: 'Q27. How often do you use cash to pay for goods and services?'.

Q28 asks for views concerning statements about cash use, and consensus is that it is needed and should stay (*Chart_19*). First 2 and last Pie-Charts can be seen as consumers' mistrust of private banks since bank-runs are not unrealistic. Having a possible way to store funds disconnected from the commercial bank network can be seen as justification for D£ introduction. Also, together with *Chart_17*, *Chart_19* shows that majority agree that cash should be there for people who need or want to use it. 90% disagree that cash issuance should stop. Overall proving that D£ should not replace cash, instead be an optional substitute.



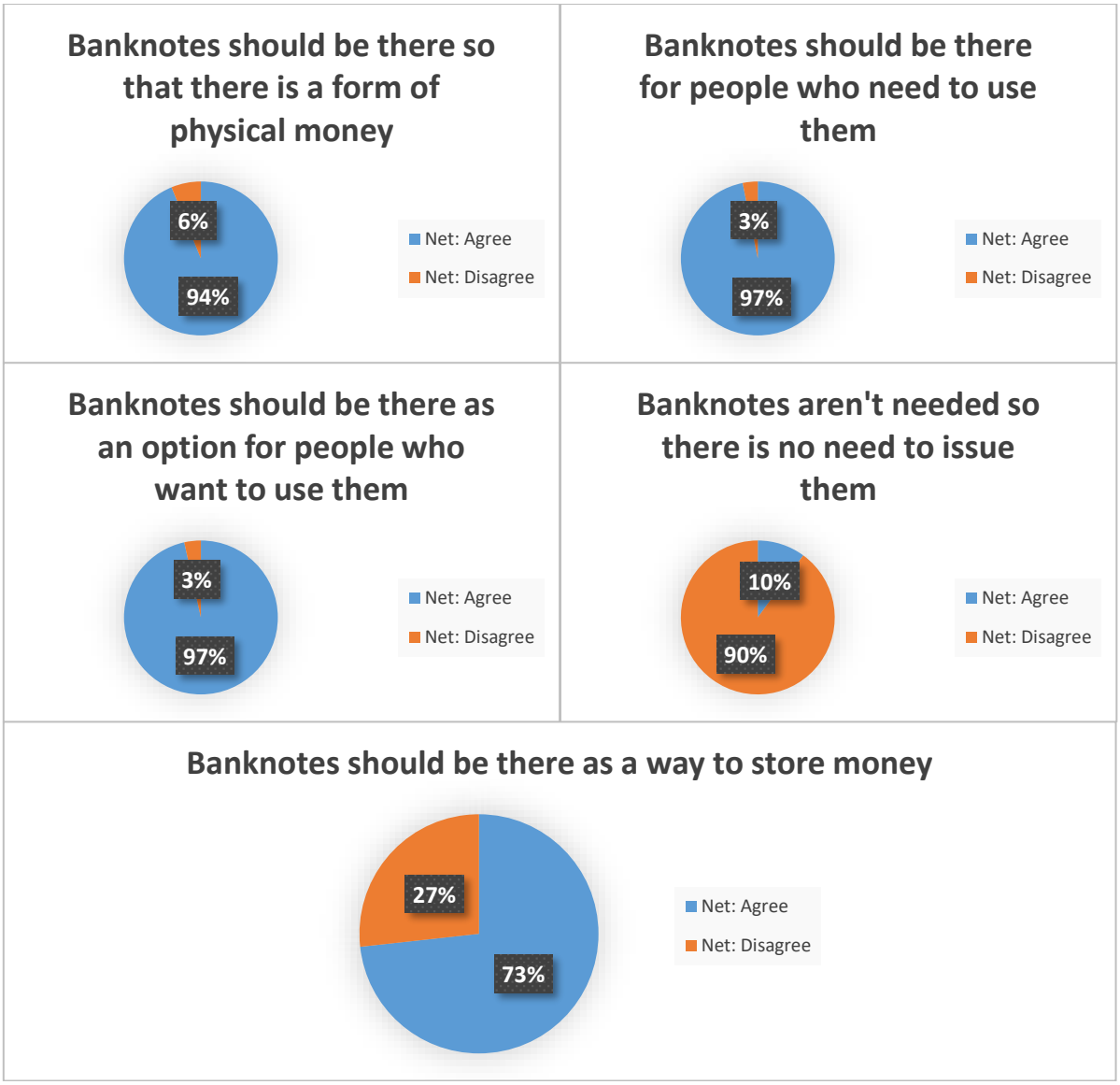


Chart_19: 'Views on the statements about Cash'.

Switching Payment Methods

Q8 shows that 63% have never or for more than 10 years did not switch their account provider (*Chart_20*). Q9 found 'being happy with the current provider' is the main reason for not changing provider (*Chart_21*). Other noteworthy reasons are consumers not seeing any benefits in switching, not considering it, time-consuming or concerns of issues during the switch. This could link the need for D£ to be attractive, adaptable, and reliable so consumers have more confidence to switch.

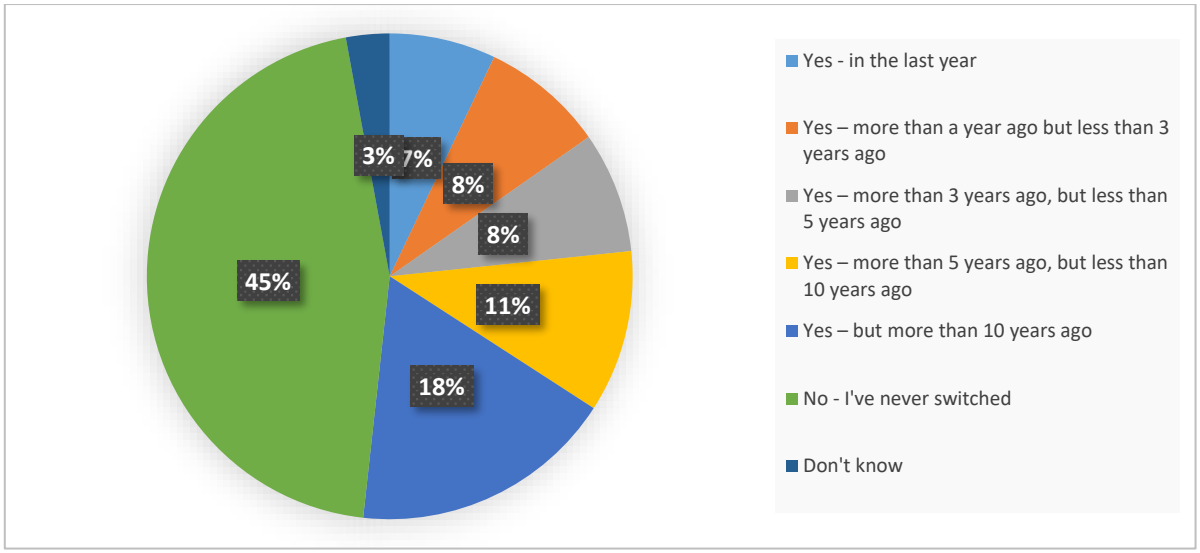


Chart 20: 'Q8. Have you ever switched any of your accounts to another provider?'.

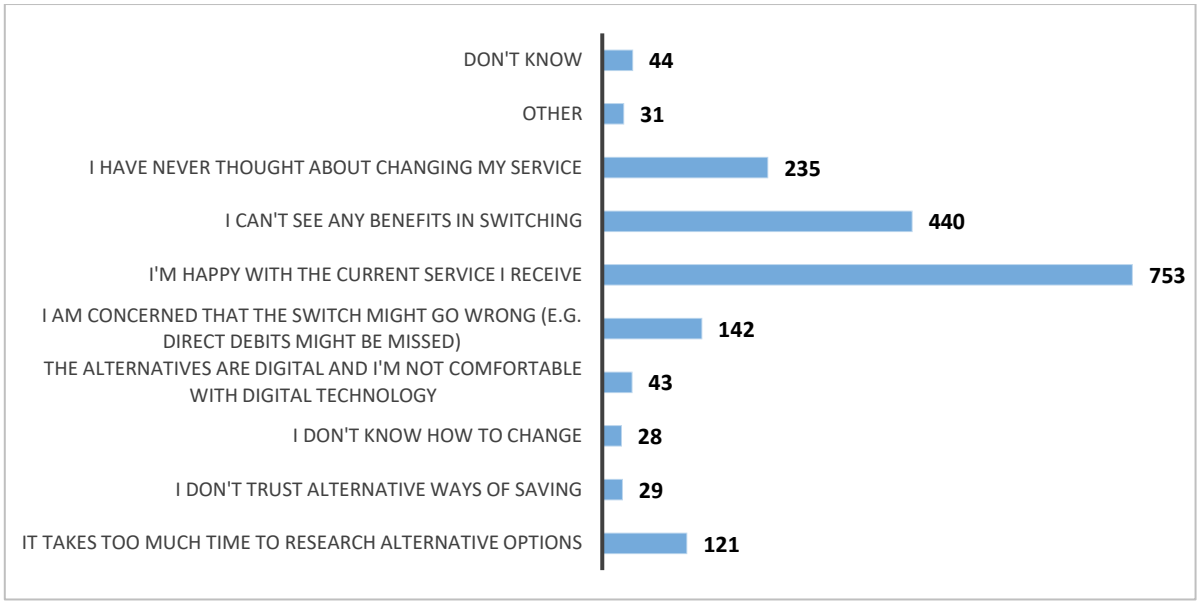


Chart_21: 'Q9. Which of the following reasons, if any, best describe why you have not changed any of your accounts?'.

Q18 asks about last time staring to use a new PM (*Chart_22*). The periods are rather evenly spread with 56% started using withing the last 10 years. This result is replicated in Q19 when asked about the last time switching their main PM switch (*Chart_23*). Q20 shows that 'quicker payments' are the main reason, followed by improved security, and customer experience (*Chart_24*). This is consistent with factors for choosing CA, SA and PMs discussed previously.

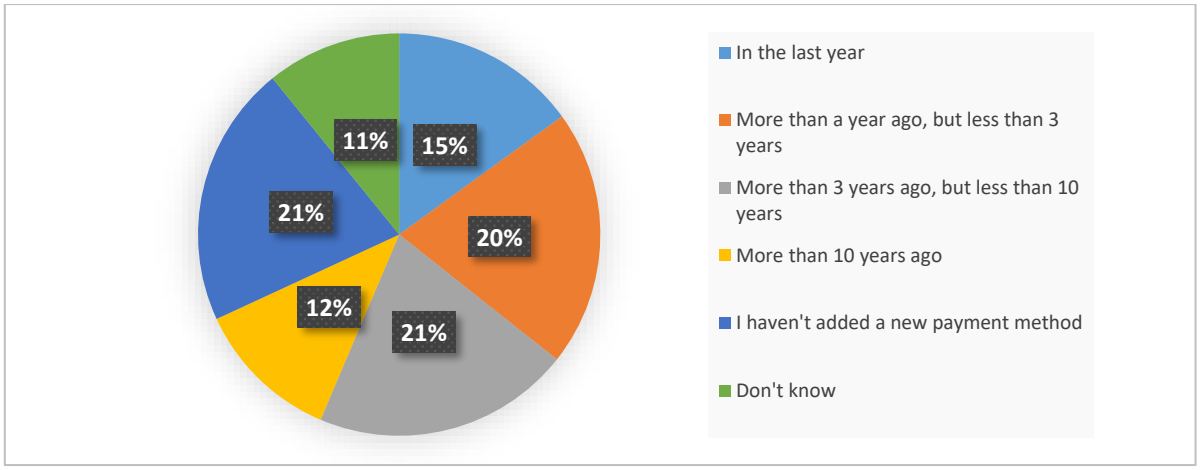


Chart_22: 'Q18. When was the last time you started using a new payment method?'.

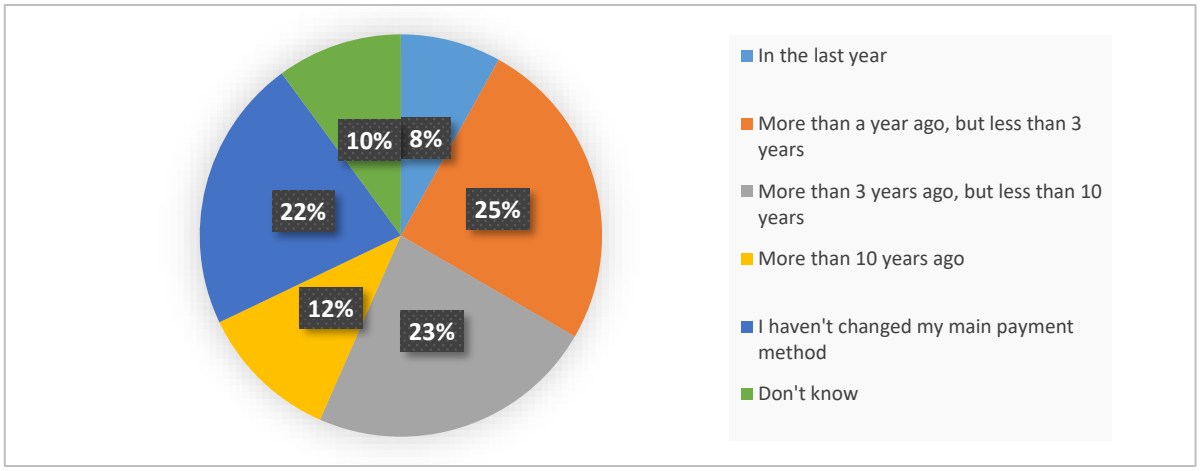


Chart_23: 'Q19. When was the last time you changed your main method of payment?'.

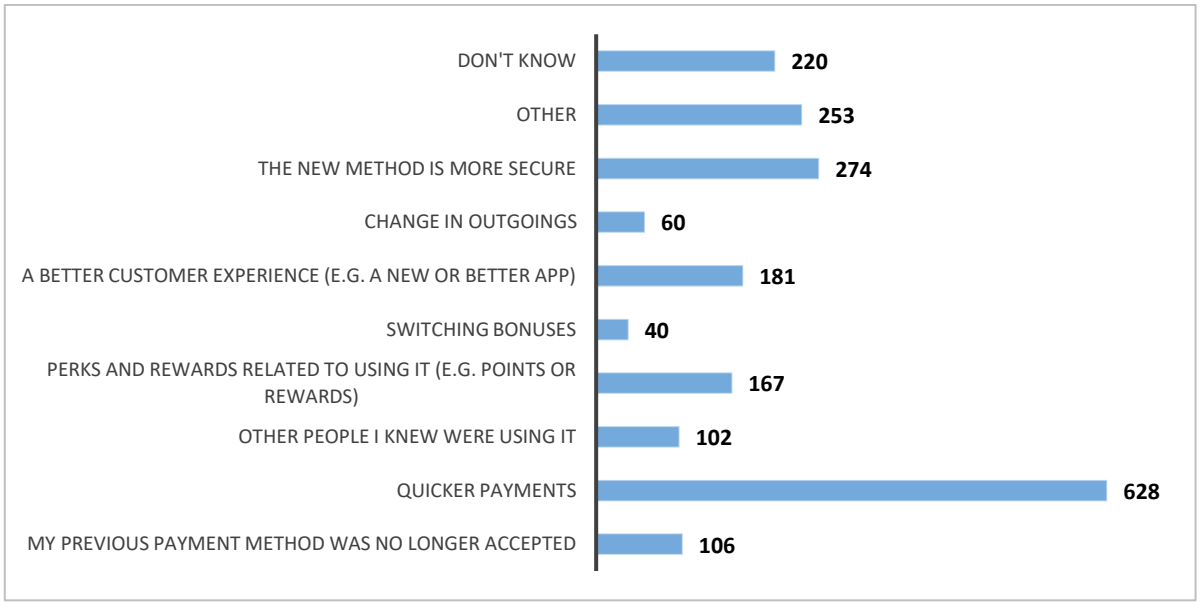


Chart_24: 'Q20. What was the reason for switching or adopting a new payment method?'.

Openness Towards Technology

Q29 shows 86% of the respondents have a phone on them most of the time, another 6% have if needed, 6% do not own one (*Chart_25*). This could signify that 14% of consumers, are unwilling or unable to use technology which links to need for inclusion considered in design of D£. Q30 further proves the lack of technological openness (*Chart_26*). Only 54% of consumers keep up with technological development and 64% prefer to observe others use of new inventions, before deciding to use it themselves.

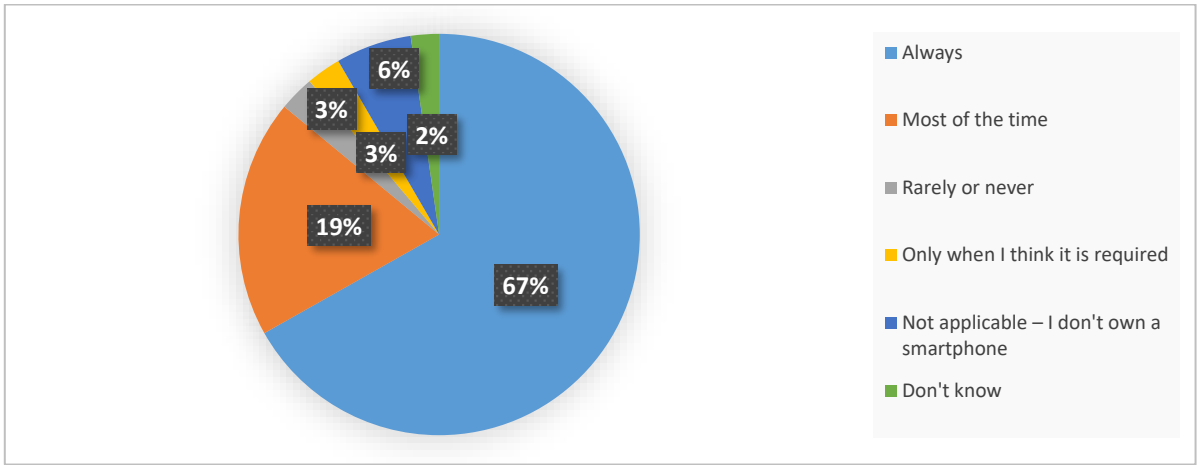


Chart_25: 'Q29. When you leave the house, how often do you bring your smartphone with you?'.

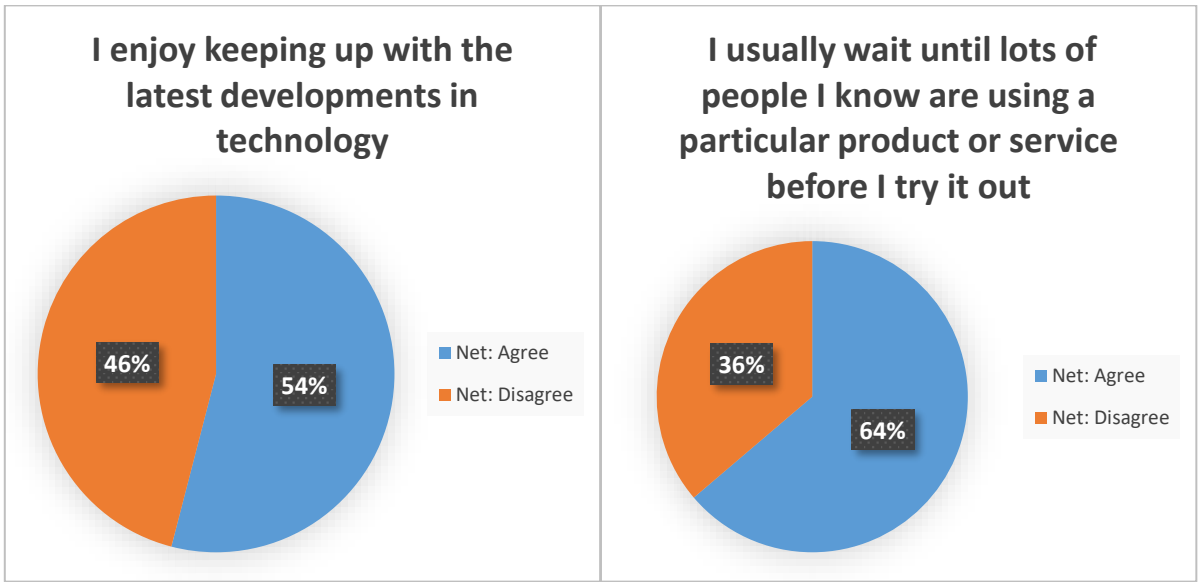


Chart_26: 'Q30. To what extent, if at all, do you either agree or disagree with each of the following statements?'.

SME Data

Starting with the SME characteristics (full list can be found in **Appendix 2**).

- **Business Size** – the majority (58%) of the SME taking this survey are micro-sized businesses followed by small (23%) and medium (19%). This could lead to skewed results in favour of micro-businesses, however, since they are relatively small it could mean they would be more likely to pursue a new industry like PIP.
- **Sales Channels** – rather evenly distributed with the top choice of Online (37%), however, 24% are over the telephone and only 22% are in-store. This means that most operations are through a medium that does not accept cash, which could indicate SMEs preferring digital PMs to physical.

Overall Usage Behaviour

Q1 of SME survey, show that SMEs accept a variety of PMs (*Chart_27*), with majority accepting online bank transfer, but cash, debit card and credit card each are accepted by approximately 43% of respondents, 22% accept PayPal or direct debit. Q2 shows that the PMs they accept are positively correlated with the PMs they prefer (*Chary_28*), 56% preferring bank transfer, 14% debit card, 7% cash and 5% credit card. Just like consumers, SMEs prefer debit over credit cards. This reinforces the possibility for D£ to be demanded.

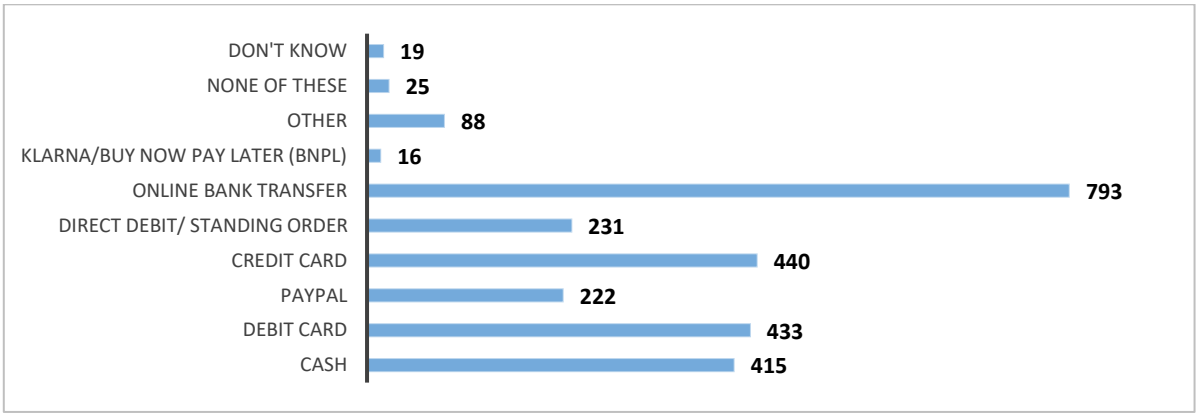


Chart_27: 'Q1. What payment methods do you accept for selling goods or services to customers?'.

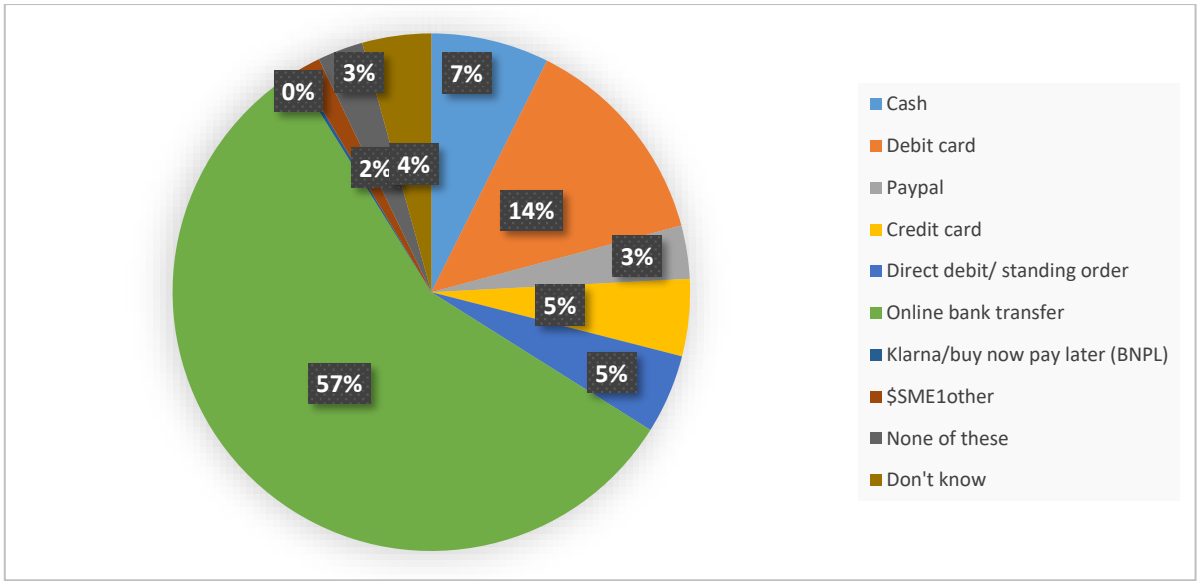


Chart_28: 'Q2. And what is your preferred method when accepting payments?'.

Q3 ask for the reasons for preferred PM (*Chart_29*). Most reasons are like consumer (security, reliability, transparency, low cost, and fast settlement times all chosen at least by 47.5%). However, 60% chose 'widely used by customer' and 54% chose 'ease of acceptance and processing from customers' as one of their responses. Top 2 reasons are customer related, so we can assume SME payment behaviour would reflect consumer payment behaviour. Therefore, when deciding to introduce D£, more weight should be placed on consumer preferences.

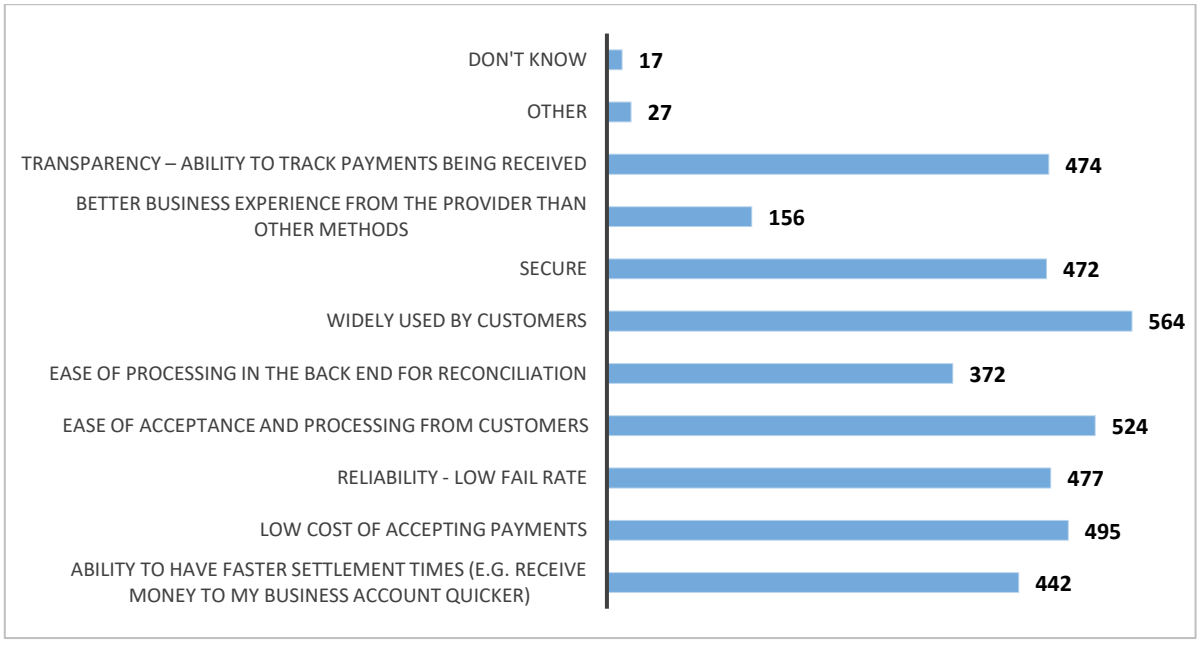


Chart_29: 'Q3. You said that is your preferred method when accepting payments. Which of the following, if any, best describes why you say that?'.

Q4 asks for most common PM received for SMEs last month (*Chart_30*). Results nearly mirror ones from Q2, so over all it reinforces the data I already discussed.

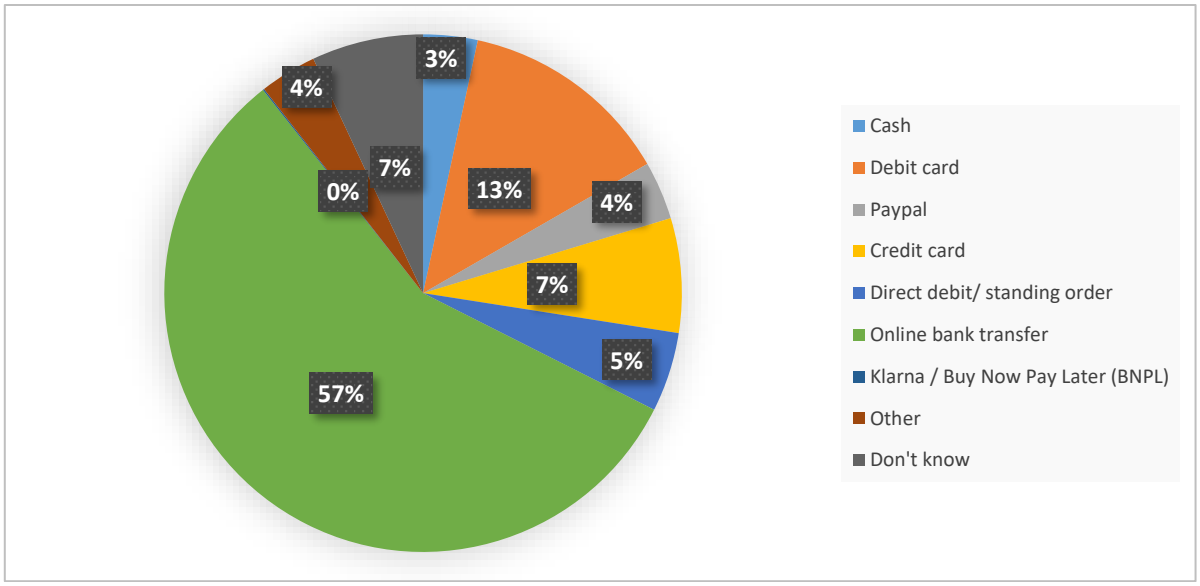


Chart_30: 'Q4. Thinking about your sales last month, what was the most common payment method that you accepted?'.

Q9 shows that 85% salaries are paid digitally, while 11% through physical payments. Combining with results from Q10, asking for important factors when choosing salary PM (*Chart_32*), we can see strong preference for fast (43%), reliable (43%) and easy to use (34%) PM regarding salary payment. Which can be linked to respective, innovation, reliability and interoperability, design criteria.

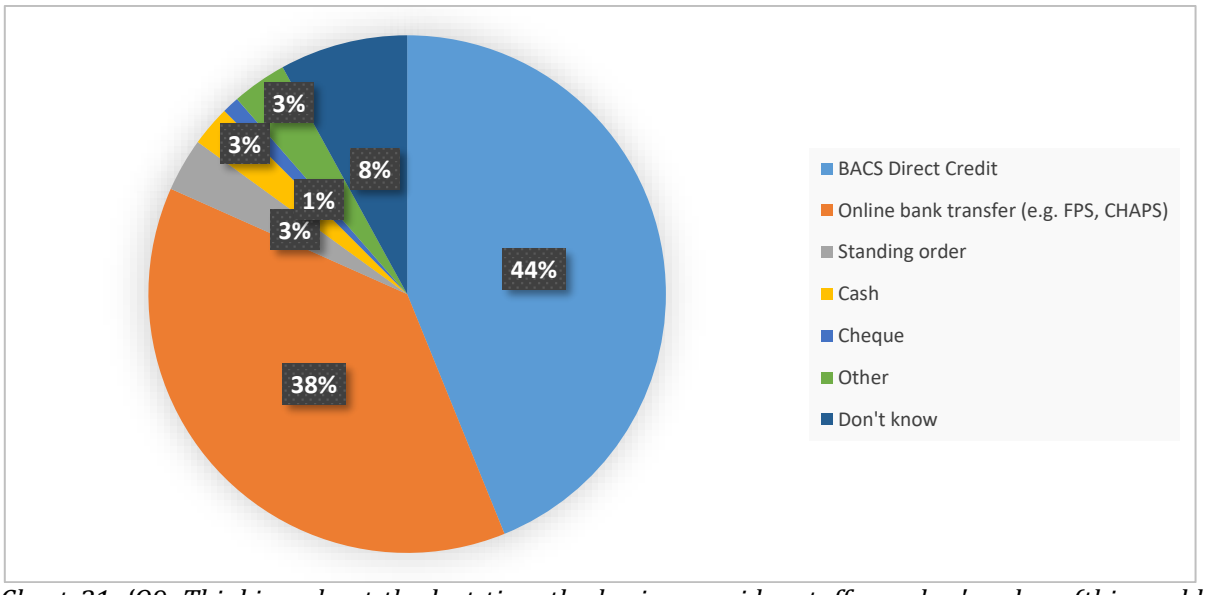


Chart_31: 'Q9. Thinking about the last time the business paid a staff member's salary (this could include your own), how was that payment made?'.

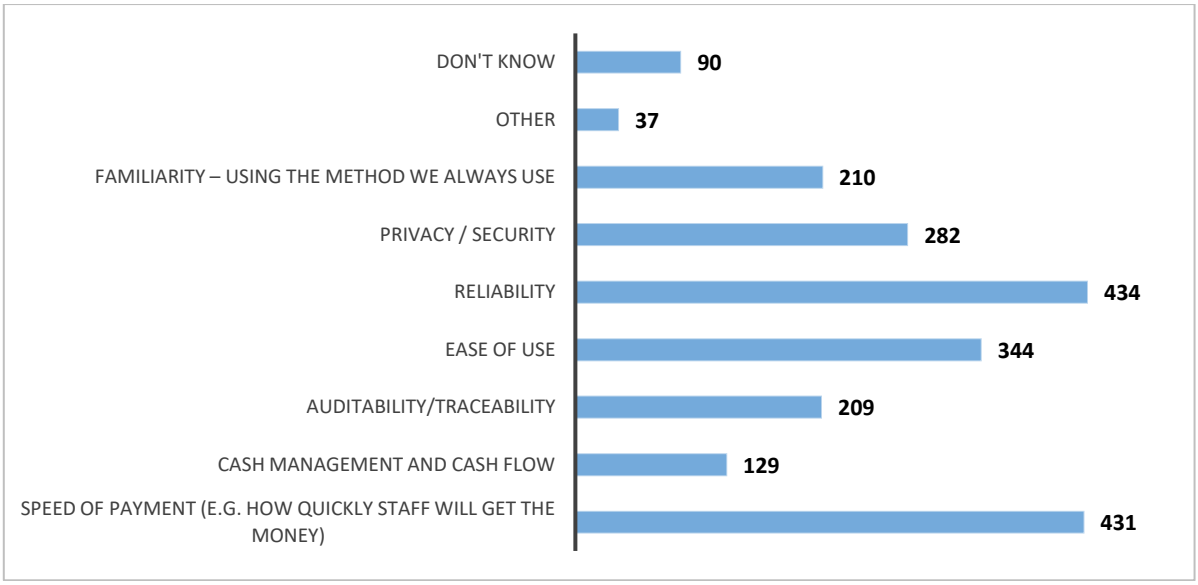


Chart_32: 'Q10. Which of the following factors are most important to consider when paying staff?'.

Q11 asks PM used for bill payment (*Chart_33*). Bills are often large, so paying them in cash would be inefficient which is reflected in responses with cash making up 1%. 92% of bill payments are digital with strong preference for bank transfer. Q12 ask for determining factors for choosing PM for bill payment (*Chart_34*). Like salary, speed (33%), reliability (42%) and ease of use (43%) are important linking to discussed design policies. However, now there is an increase in responses for traceability (34%) and security (32%), likely due to increased importance a bill carried compared to salary, which links to security criteria.

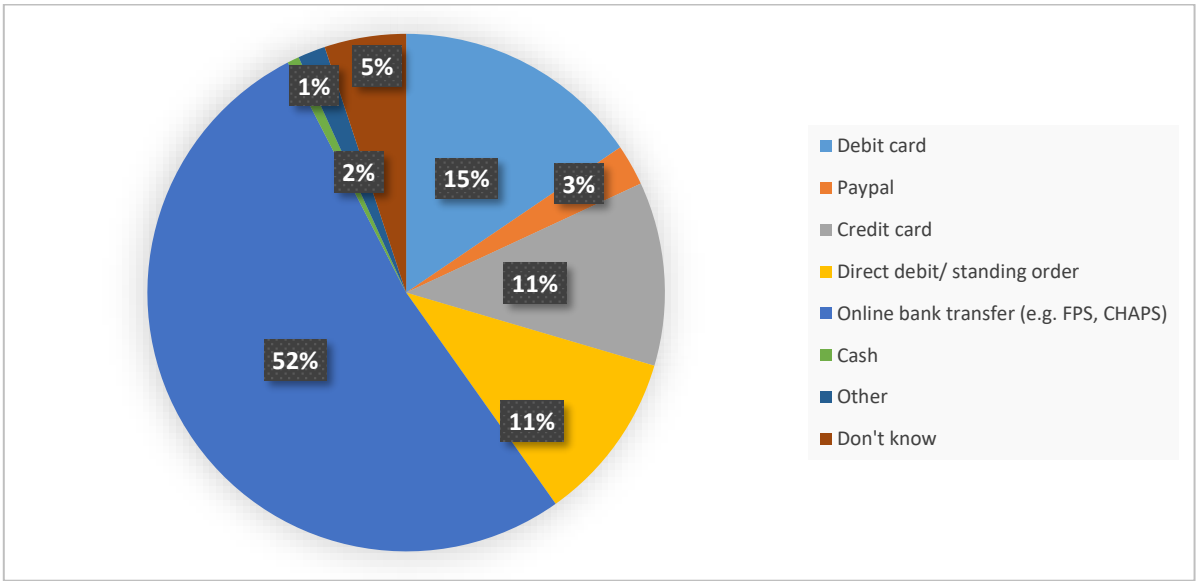


Chart_ 33: 'Q11. Thinking about the last time you paid a bill for your business how did you pay?'.

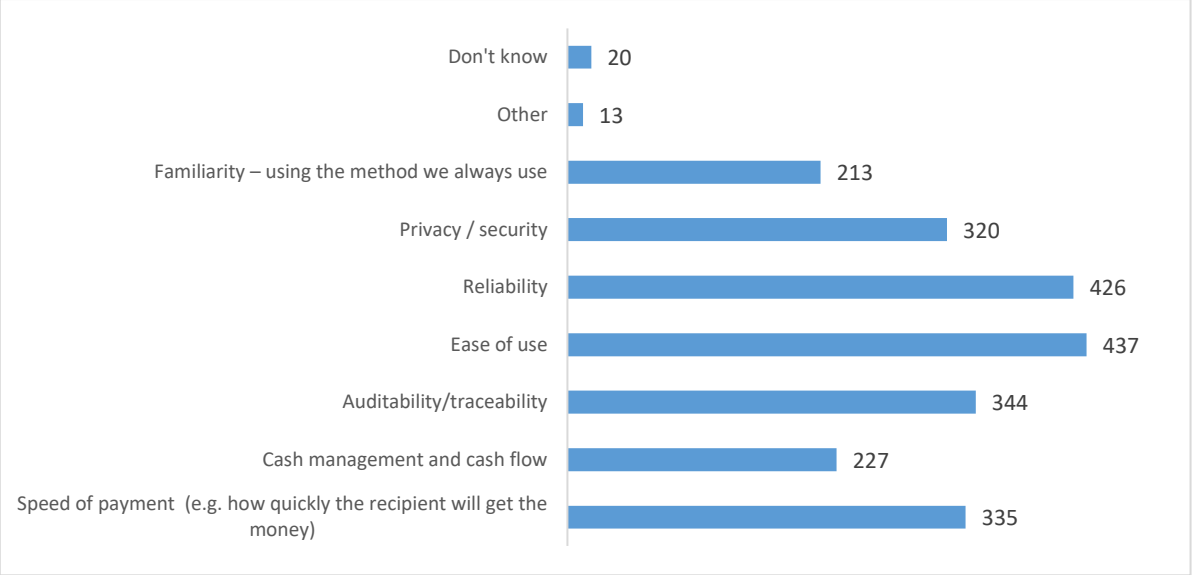
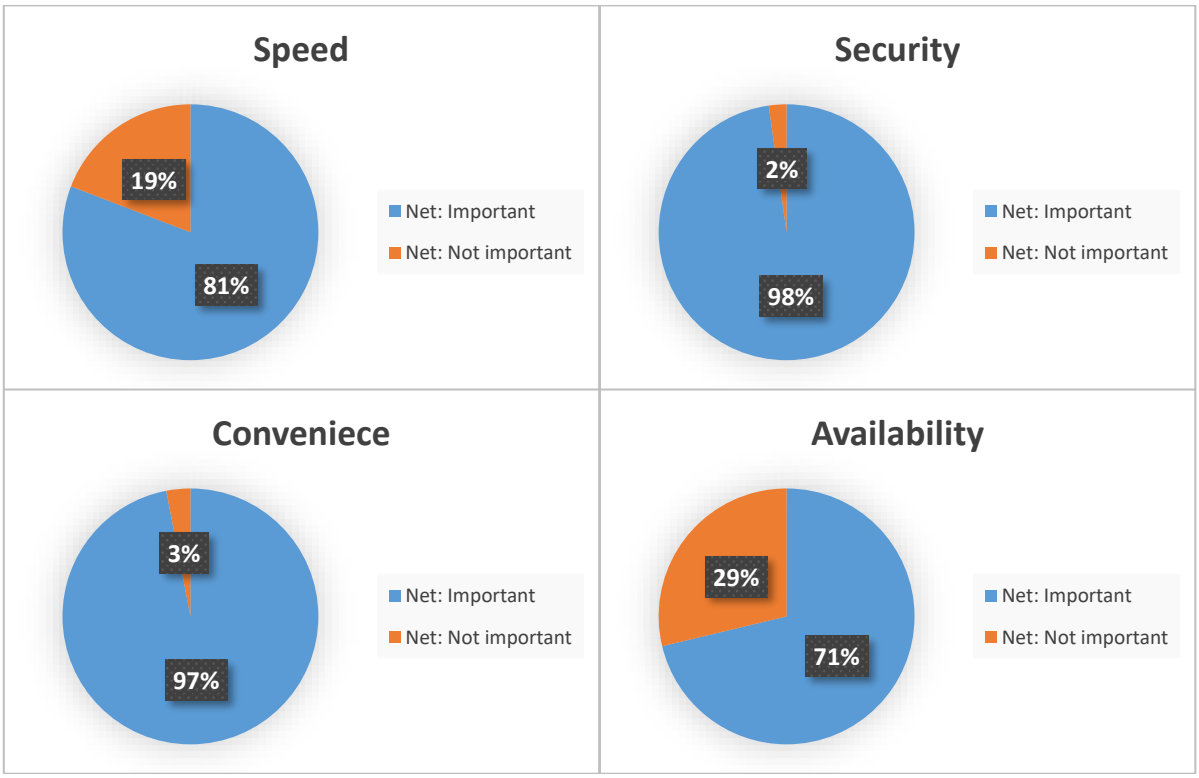


Chart_34: 'Q12. Which of the following factors are most important to consider when paying bills or making other business transactions?'.

Q15 asks to give importance to factors for making online purchases (*Chart_35*). Yet again, I obtain results consistent with previous findings for online payments. All factors, but availability (less important for SMEs), are like consumer responses within 3% deviation and can be linked to respective design criteria.



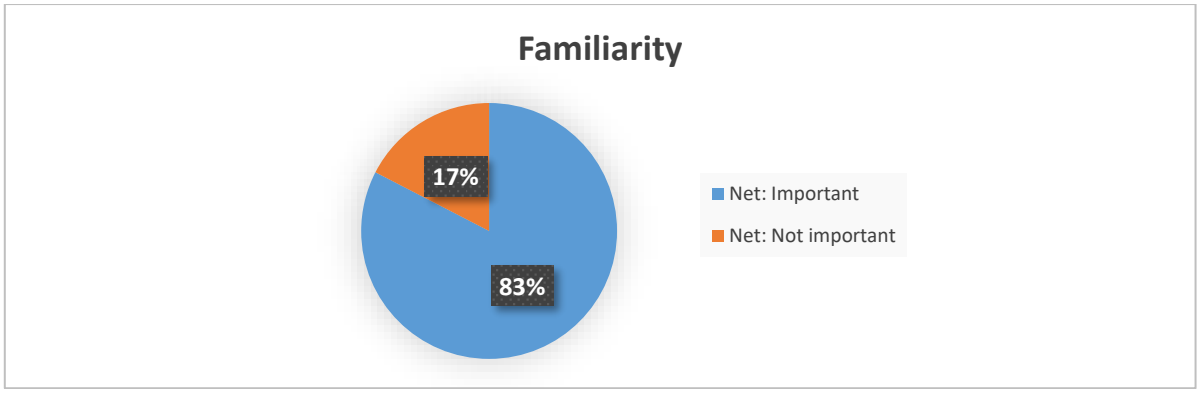


Chart_35: 'Important factors for online purchase'.

Switching Payment Methods

Q6 asks for last adoption of new method for accepting payments from customers (*Chart_36*). 32% SMEs changed within last 3 years, 52% within last 10 years and 16% over 10 years ago. However, biggest part (32%) has responded 'don't know', which undermines reliability of the data. SMEs likely to have historic data for their methods for accepting payments, and while a small percentage of 'don't know' would be manageable, high percentage like here could cause significant errors in data interpretation for SMEs. Nevertheless, combining this information with Q7 asking the reason for change in PM accepted (*Chart_37*). It is consistent with discussed data (*Chart_29*), customer convenience is most important factor, leading to same conclusion about design criteria.

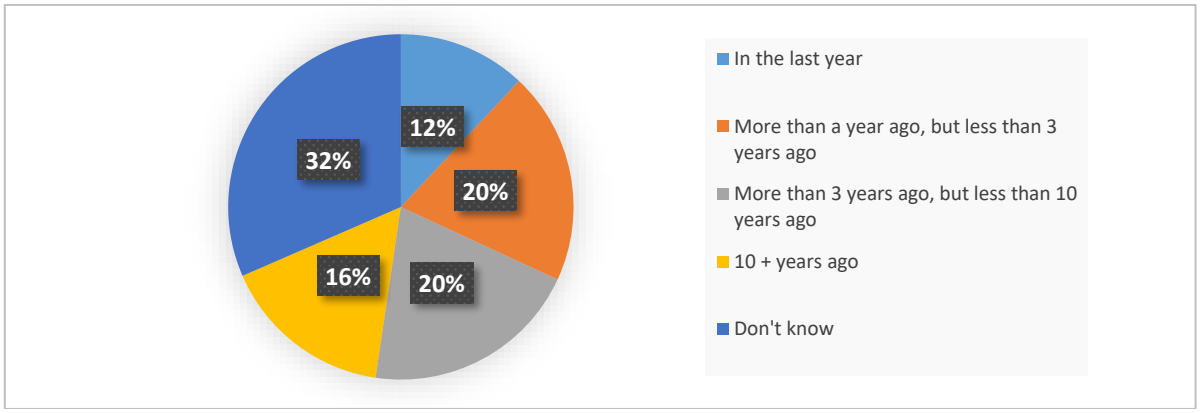


Chart_36: 'Q6. When was the last time you took proactive steps to change how you accept payments from customers?'.

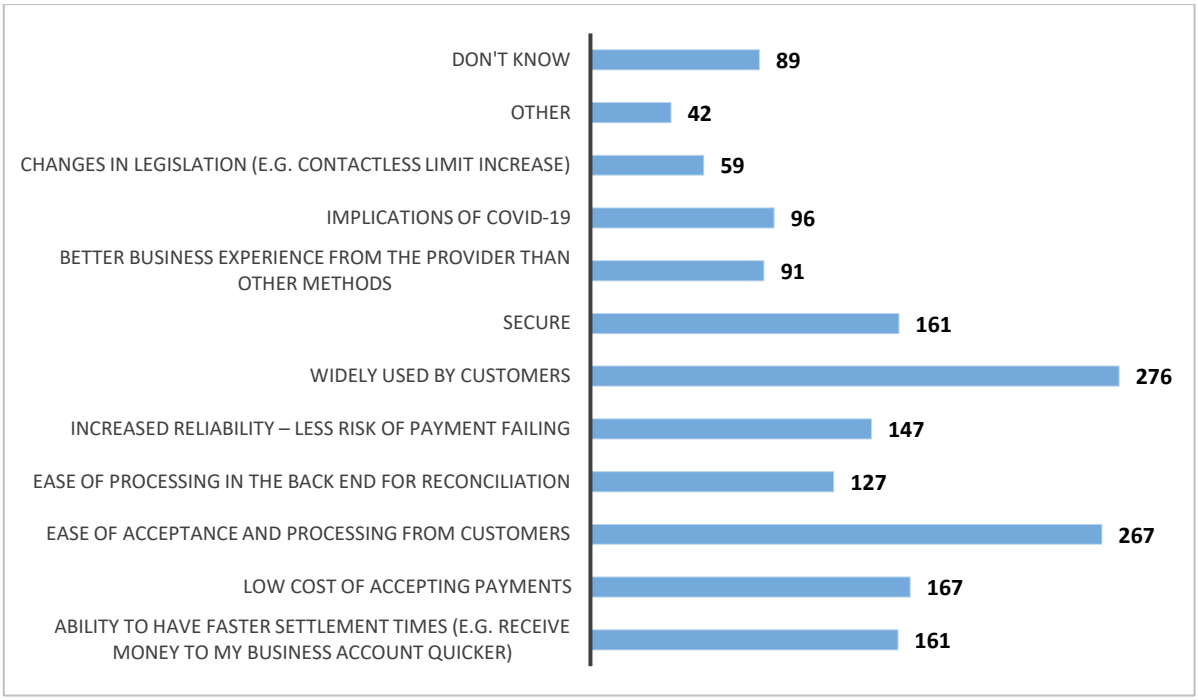


Chart_37: 'Q7. Thinking about the last time you started to accept a new payment method what made you adopt that new payment method?'.

Q13 asks for last adaptation for new method for making payments by SME (*Chart_38*). It is replicating of information discussed in *Chart_36*. Q14 ask for reasons behind the switch (*Chart_39*), which are consistent with discussed data in *Charts_32 & 34*. Leading to same conclusion of ease of use, speed, reliability, security, and traceability reinforcing design criteria of interoperability, attractiveness, innovation, reliability, and security.

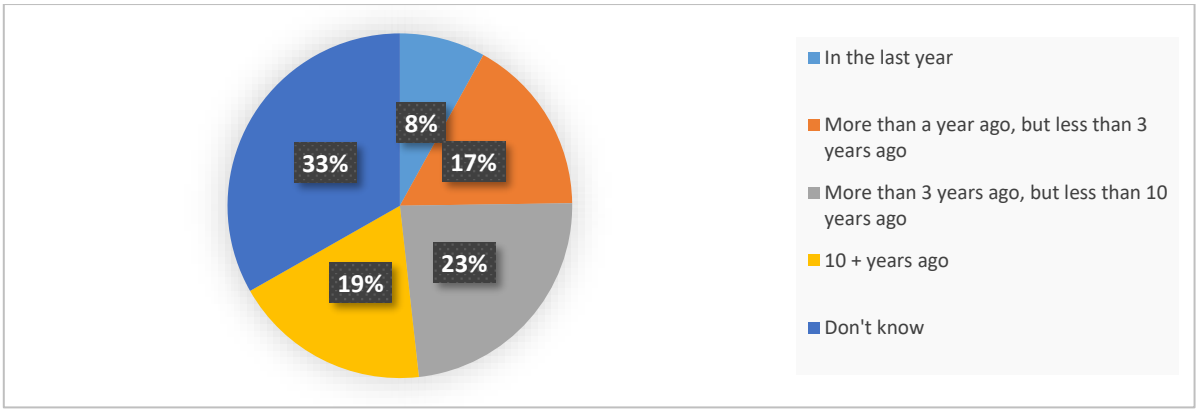


Chart_38: 'Q13. When was the last time you adopted a new payment method to make payments on behalf of your business, either adding a new payment, changing to a different method, or changing provider?'.

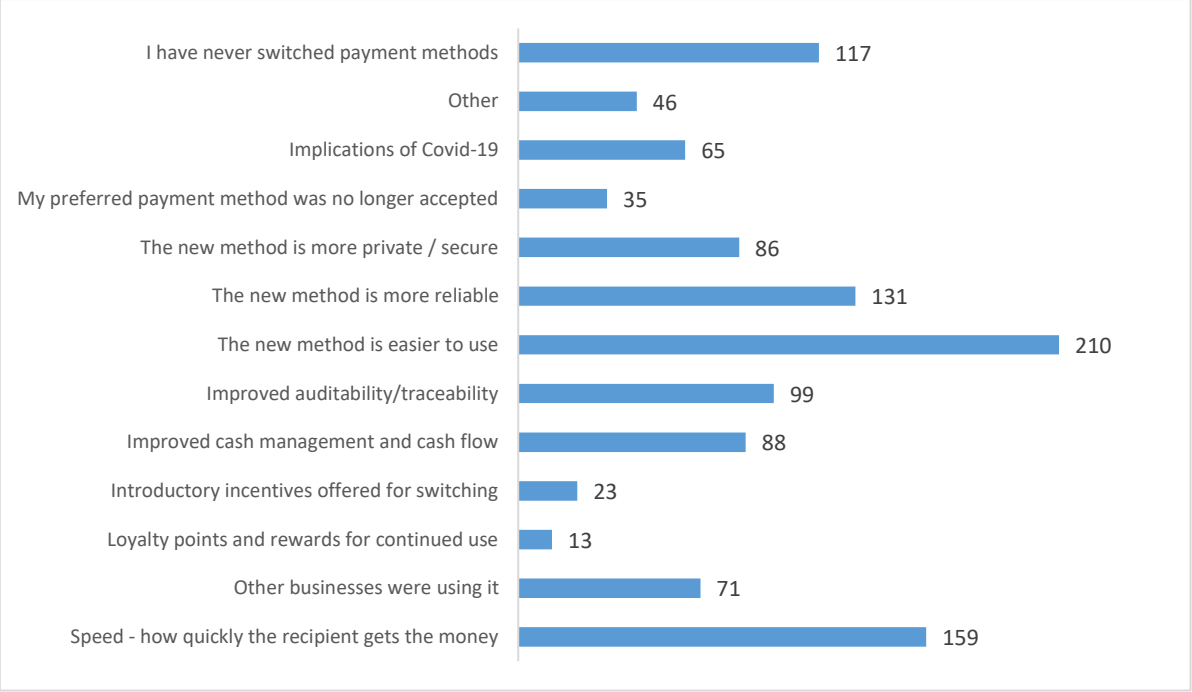


Chart_39: 'Q14. What were the reasons for switching or adopting a new payment method?'.

Openness Towards Technology

SMEs were asked to (dis)agree with 2 statements on technology (*Chart_40*). 84% consider it important for running their business. This could indicate SMEs' faster uptake of new technologies (e.g. D£), while 59% usually waiting for new products and services to be tested could indicate slower uptake. This could imply higher likelihood to be involved in D£ providing better services according to desired characteristics by SMEs.

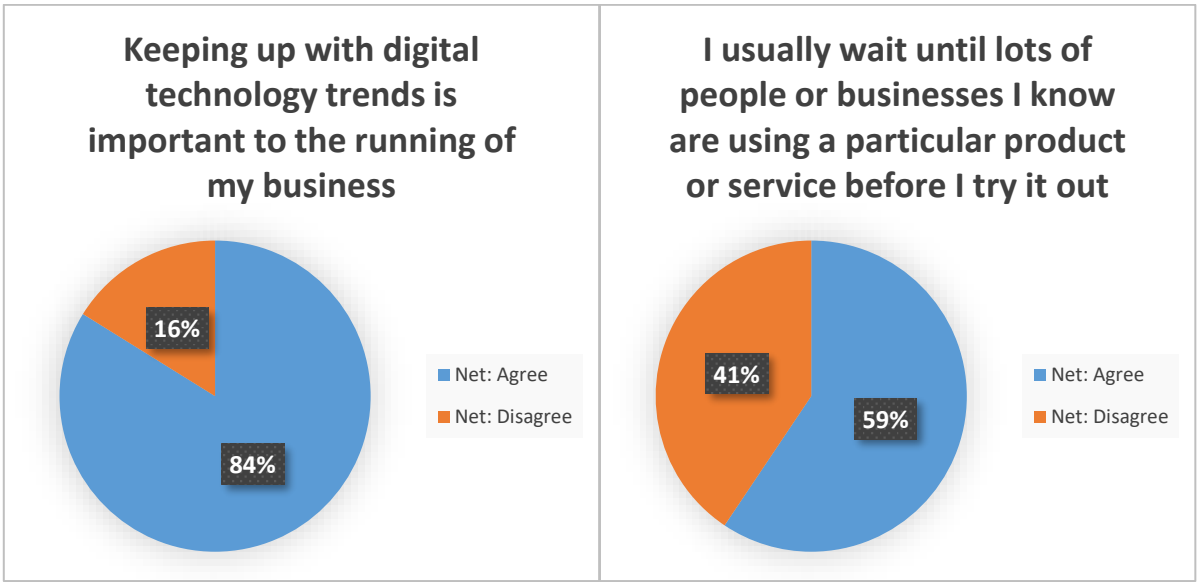


Chart_40: 'To what extent, if at all, do you either agree or disagree with each of the following statements?'.

Chart_41 shows the responses about use of internet by SMEs. All uses of internet are distributed relatively evenly, with exception of email and business banking. Email is expected, since its main medium of communication in businesses. Business banking can be a possible area where D£ could be used by SMEs rather than consumers interacting with SMEs, possibly linking it to scalability design criteria.

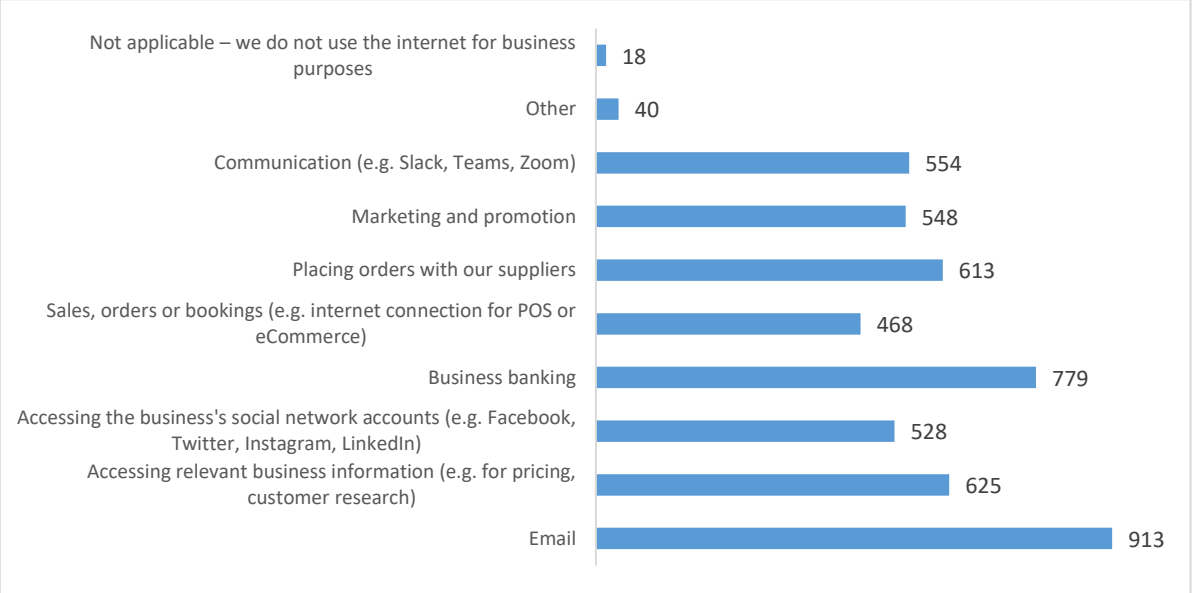


Chart_41: 'What activities does your business use the internet for?'.

Findings Presentation

Through reviewing and evaluating the survey responses for consumers and SMEs payment behaviours, together with literature findings, I have arrived at several key aspects to consider when designing a D£ that could increase or decrease demand for it.

From literature review, by looking at reasons for lack of success of launched CBDCs, I can Identify how to improve possible demand for D£. Marketing and public awareness are required to ensure majority of demographic knows about D£ existence. Considering 46% of consumer do not keep up to date with technological innovations willingly, there needs to be marketing of D£ to ensure demand. This is not one of design principles of D£, however, it would be beneficial to include it as an extension of 'Inclusion and Attractiveness'. Inclusion, as proven by the sand dollar and jam-dex is not a good principal for making a CBDC, but rather a possible additional benefit to include, especially in countries with already high financial inclusion like Bahamas or UK. Attractiveness, on the other hand, has proved to be key factor for choosing a PM through Avant smart card and survey data supporting convenience and ease of use as reasons for choosing a PM.

Literature also provides evidence for trust and privacy being significant factors for demand of CBDC, eNaira shows preference for government not being able to see personal data, which is consistent with BoE's view, and they are dedicated to set regulations to ensure only anonymised data is seen by the BoE. Trust and privacy are also reinforced by consumers and SMEs valuing it high as reason to choose a PM. Final point obtained from launched currencies is the requirement for infrastructure to be set-up before launch, which is consistent with D£ principle of 'adaptability' and survey data from of consumer and SMEs for importance of availability.

Last two literatures could be most reflective of the possible demand for D£. Bidder's (2022) shows that German households already have demand for the D€ during stable and even higher during unstable times, both have the risk of ban disintermediation. However, this is theoretical, and a consideration must be made about bank disintermediation. Will the demand for CBDC remain high with the rise in credit price caused by deposit drain? BoE has estimated that lending rates would rise by 20 b.p. given a 20% deposit migration in stable times (BoE, 2023a). Second literature is Li (2022) who identified that majority of demand for CDBC would be from deposit substitution that cash reinforcing Bidder's

finding. Additionally, they found that overall digitalization of financial services and integration of technology into daily life will be a driver of demand for CBDCs. Which is consistent with D£ design principle of supporting innovation.

Security was stressed factor in the survey data by both consumers and SMEs as a reason for choosing a PM, mainly being concerned with fraud being an issue. I believe one of existing regulation like PCI DSS Level 1 (Baykara, 2022), adapted for PIPs would suffice for ensuring no lost demand. Additionally, it is already designing principle of D£.

Finally, switching an account is likely the biggest challenge for demand for CBDC. Respondents, particularly consumers, showed significant reluctance to switch bank accounts. Considering that SME, highly value consumer PM preference when choosing what PM to accept, overall demand for D£, except some SME specific uses (e.g. business banking), is driven by consumers. So, to ensure there is demand for D£, BoE would need to ensure consumers are attracted to it, which brings the presentation of findings back to the need for marketing campaigns to ensure consumers are aware and attracted.

Conclusion

To conclude, I believe it is too early to justify creating a D£, however, I do believe it is justifiable to continue research into D£. D£ has attractive features like being completely risk-free (so long as government exists), possible boost of innovation through competition creation and disintermediation of highly leveraged banks combined with negative features like possible increase in credit price or lack of relevant historical data. Before deciding on creating it, a survey directed at D£ demand, should be carried out. Additionally, I believe that if BoE were to pursue designing D£ according to principals stated so far, even if not created there should be overall welfare gain (e.g. research into new technologies can be applied elsewhere).

I would like to mention that there are other factors concerning CBDCs, due to the limited nature of the assignment I am unable to cover all of them. Some possible areas for further research: remuneration and interest rates of a CBDC, correlation of trust and technology or government, foreign exchange, technological design of CBDC, wholesale CBDC, or inspecting survey question responses for specific respondent characteristics (e.g. age) for more in-depth view of D£.

Approximate word count excluding charts and captions, references, appendices: 4938

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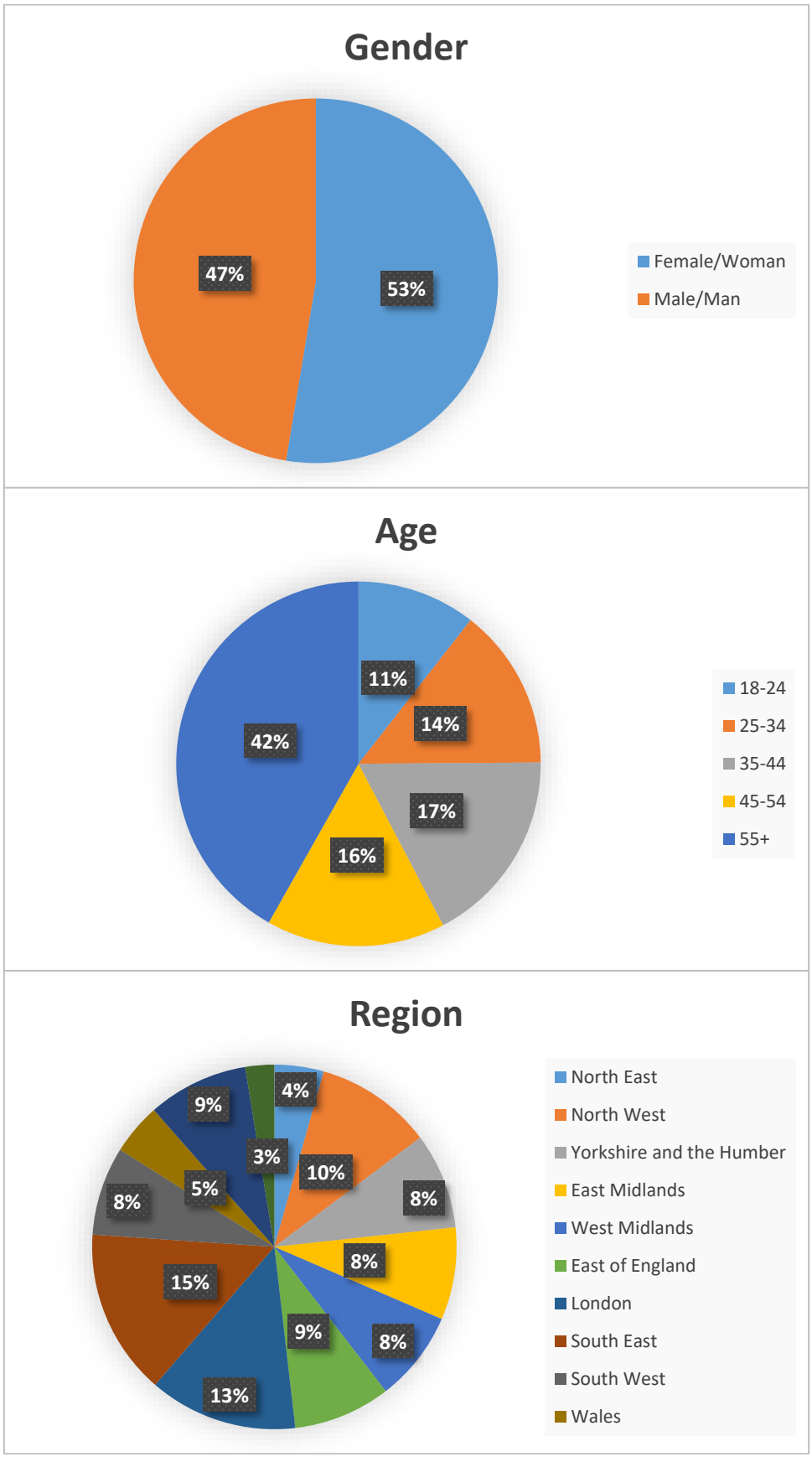
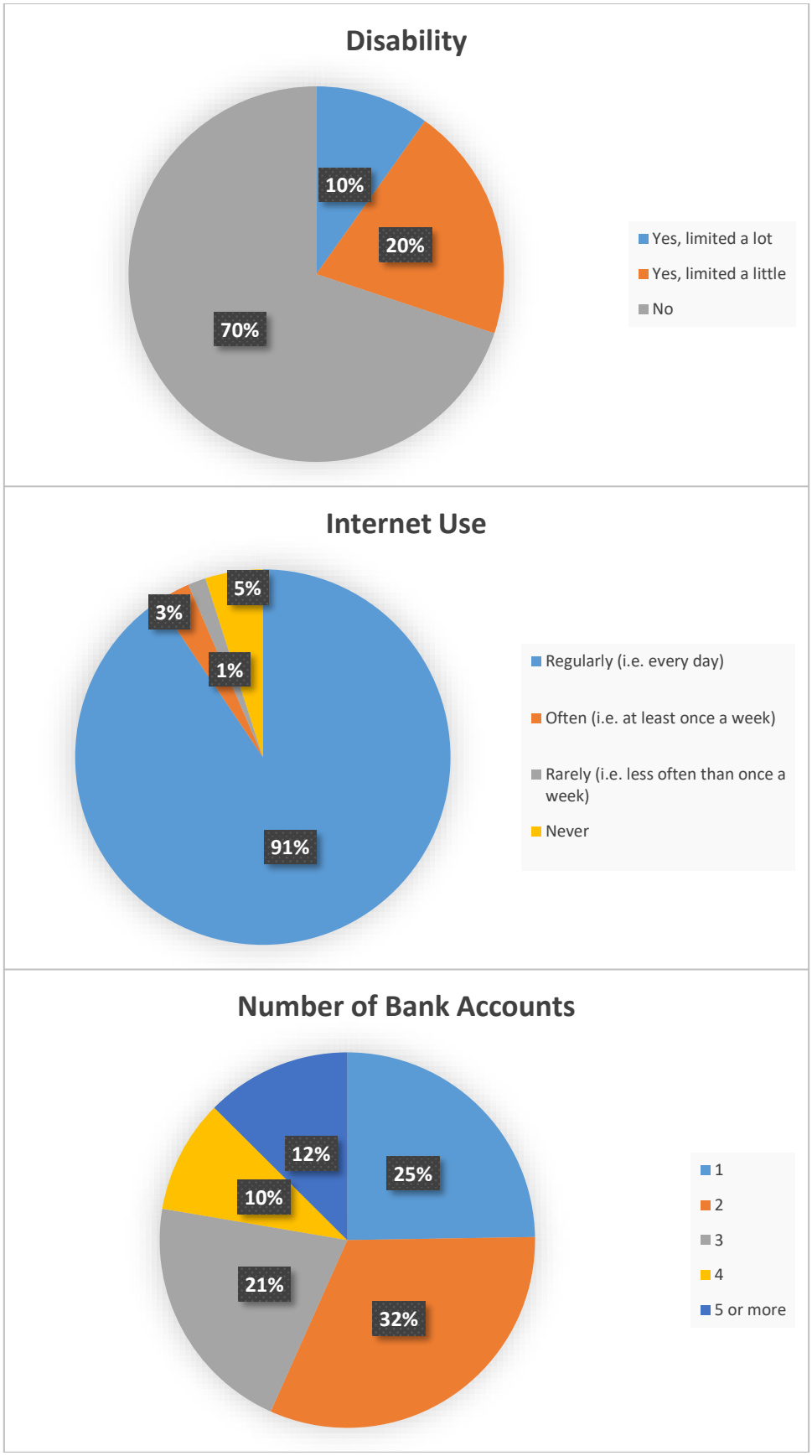
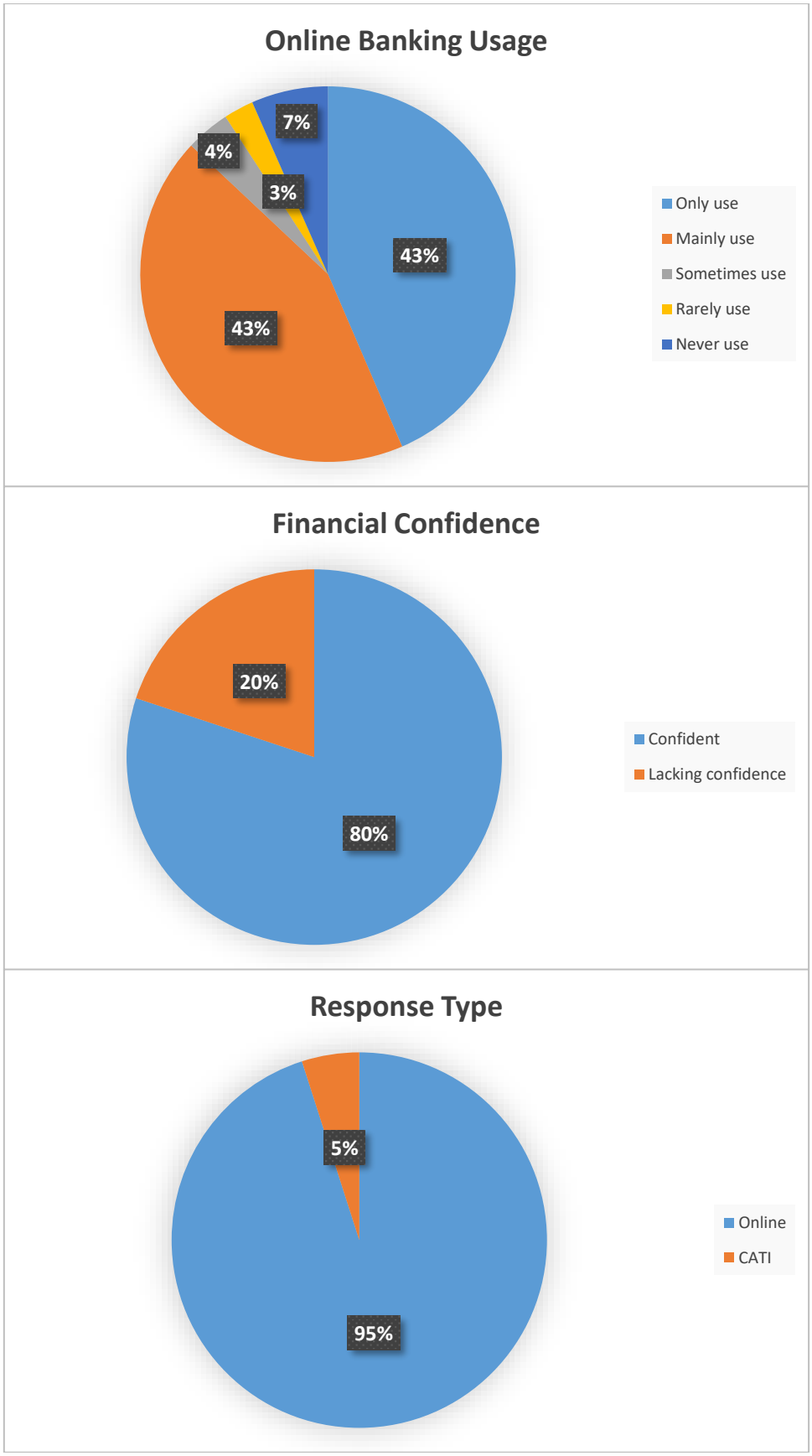
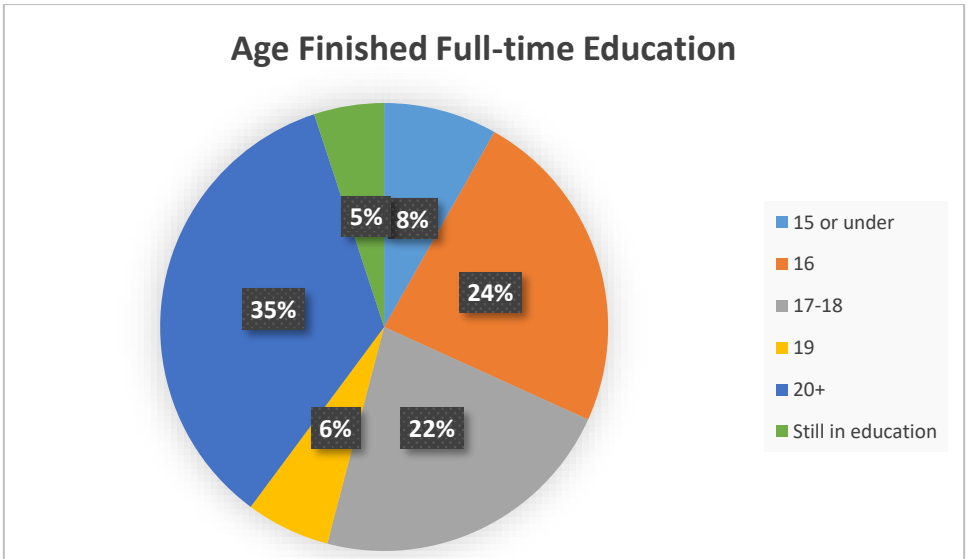
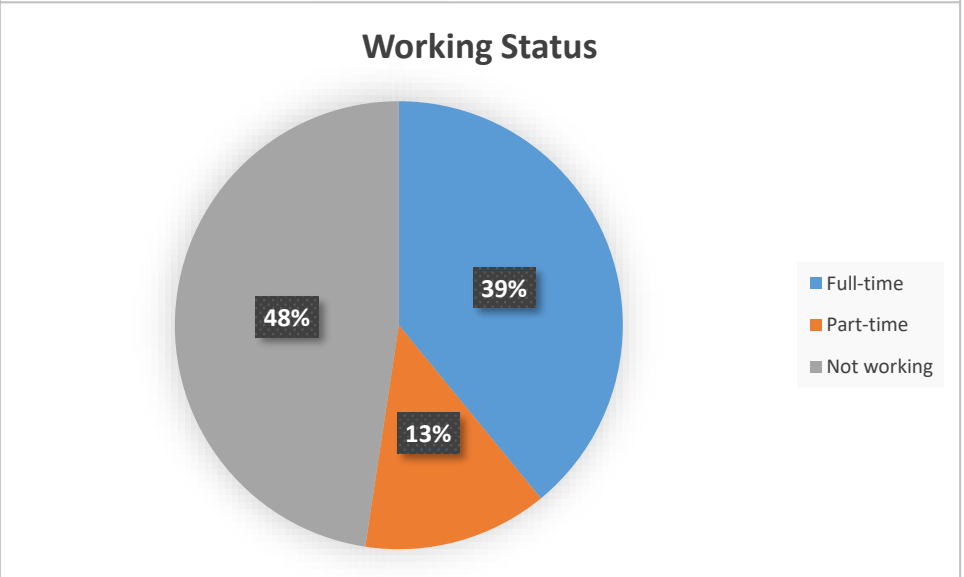
Appendix 1 – Consumer Characteristics (weighted)

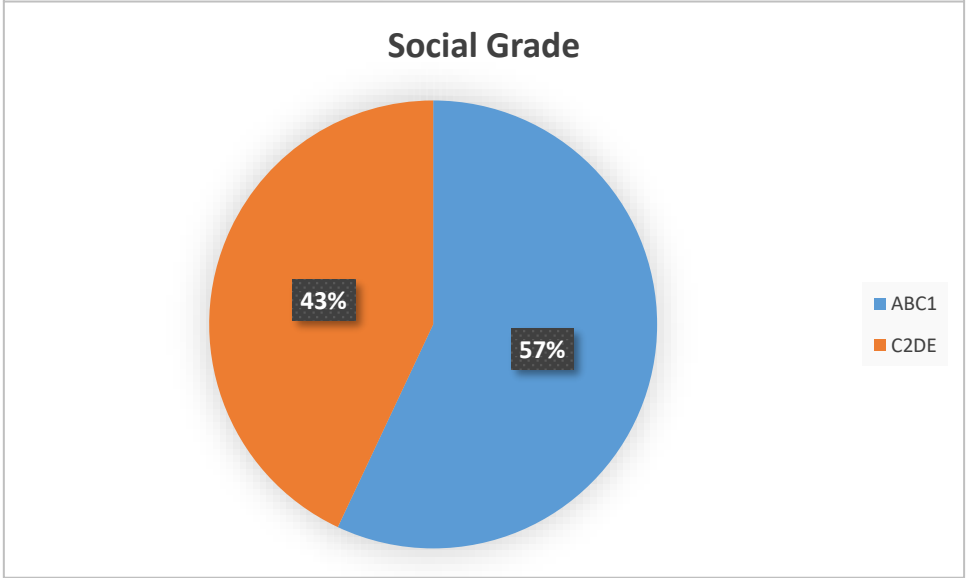


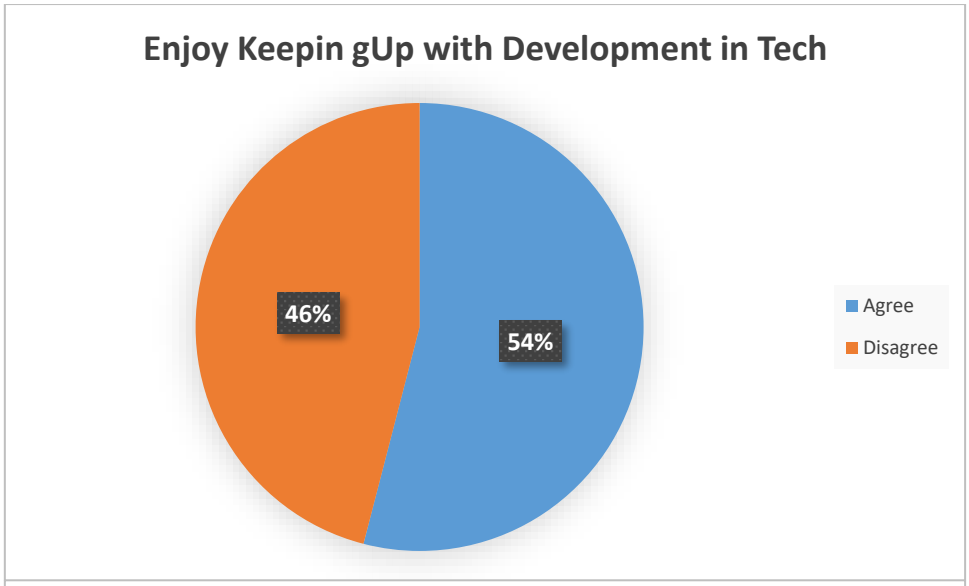

Disability
10%
20%
70%
Yes, limited a lot
Yes, limited a little
No
Internet Use
5%
3%
1%
91%
Regularly (i.e. every day)
Often (i.e. at least once a week)
Rarely (i.e. less often than once a week)
Never
Number of Bank Accounts
12%
25%
10%
21%
32%
1
2
3
4
5 or more

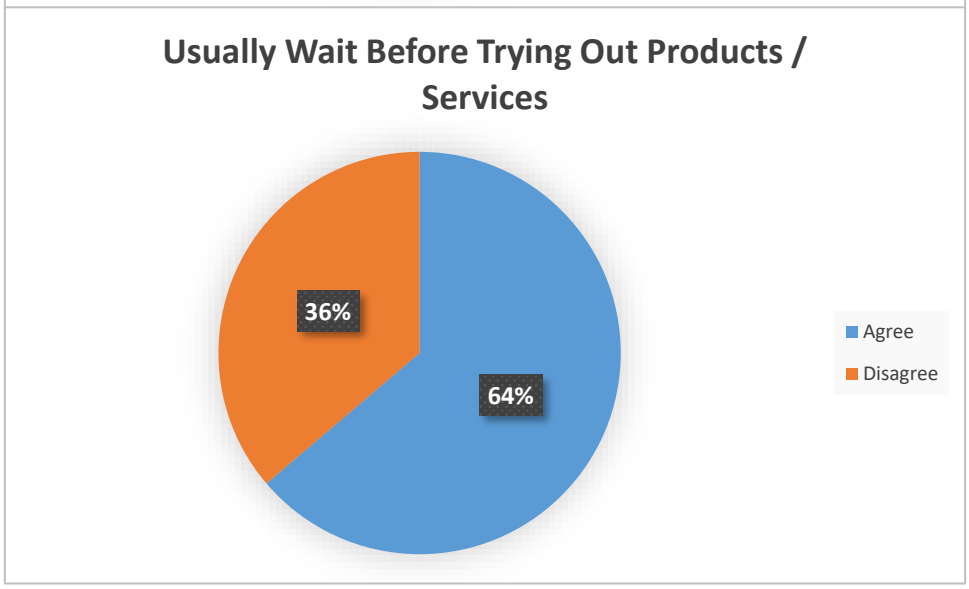

Online Banking Usage
7%
4%
3%
43%
43%
Only use
Mainly use
Sometimes use
Rarely use
Never use
Financial Confidence
20%
80%
Confident
Lacking confidence
Response Type
5%
95%
Online
CATI


Age Finished Full-time Education
5%
8%
24%
35%
6%
22%
15 or under
16
17-18
19
20+
Still in education

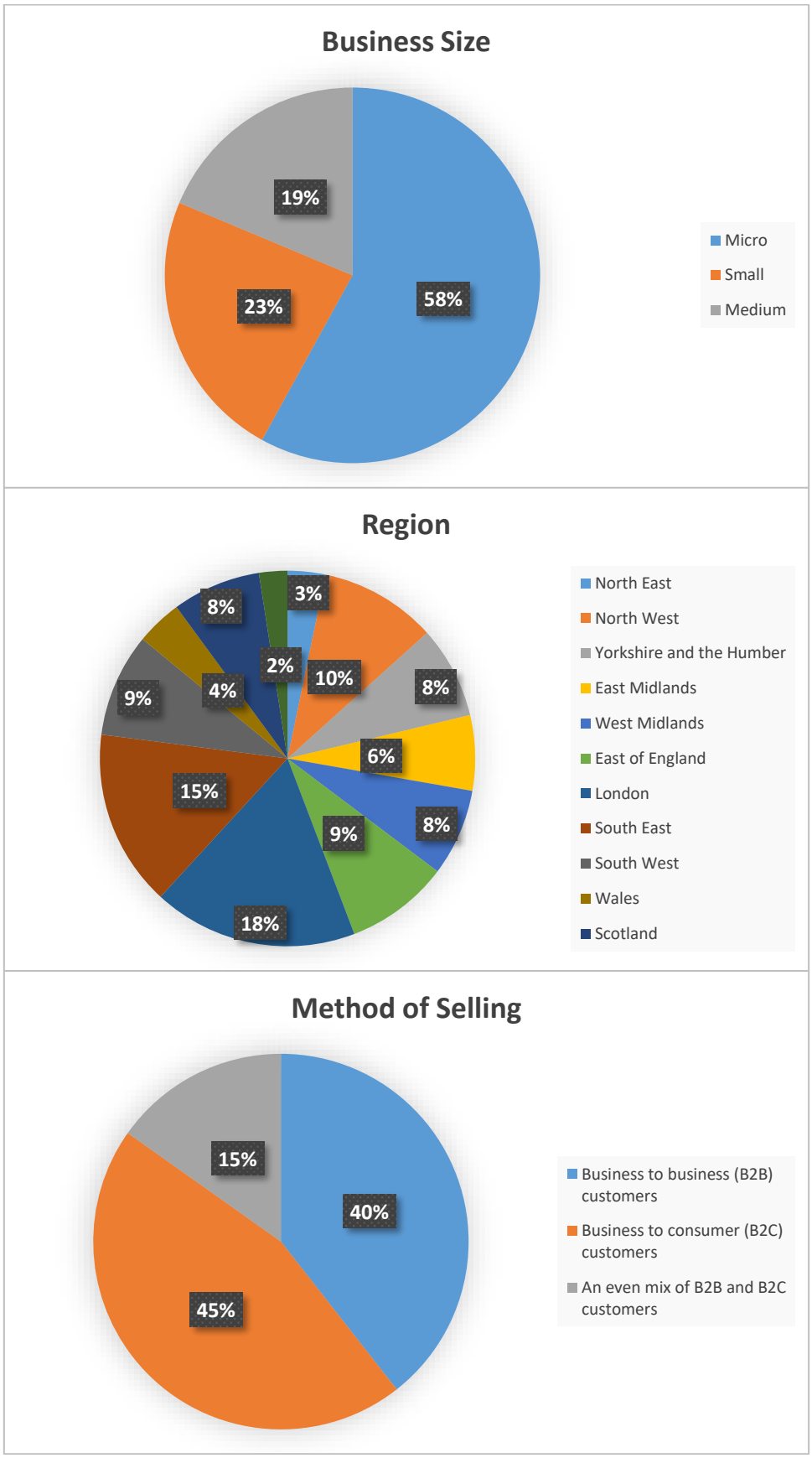

Working Status
39%
48%
13%
Full-time
Part-time
Not working


Social Grade
43%
57%
ABC1
C2DE

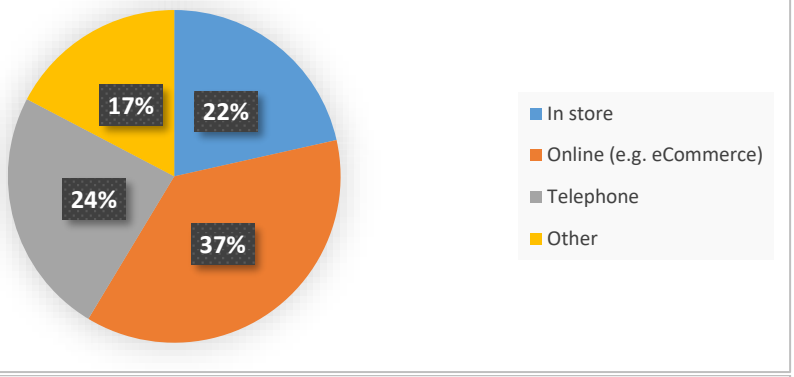

Enjoy Keepin gUp with Development in Tech
46%
54%
Agree
Disagree


Usually Wait Before Trying Out Products / Services
36%
64%
Agree
Disagree

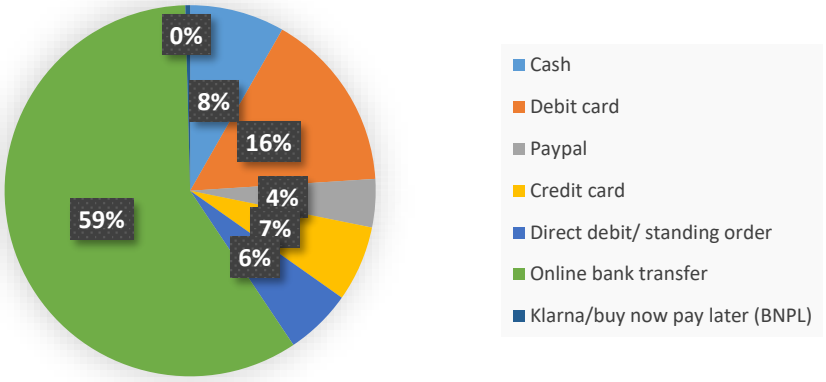
Appendix 2 – SME Characteristics (weighted)



Sales Channel



Preffered Method of Payment



Industry