



SME productivity in the Era of Blockchain Disruption

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Abstract. Productivity in Canada has been an issue for several decades; this was largely brought to light relatively recently by the Organization for Economic Co-operation and Development (OECD) warning. When compared to the United States, and other OECD nations, Canada's productivity has fallen significantly behind, which in turn has hurt its competitiveness in the global trade market. Due to a lack of competitiveness, Canada does not export much, and as a result Canadian companies often cannot take advantage of economies of scale, economies that are needed to boost productivity. When looking into the causes of this productivity shortcoming, due diligence revealed that Canadians are highly risk averse, and while avoiding risk can be prudent in some circumstances, extreme risk aversion actually hampers development, innovation, and improvement as everyone follows the status quo. Another major contributor to the productivity problem is a failure to adopt technology for business growth, specifically in the small and medium sized enterprises (SMEs) that make up 99.8% of Canadian businesses, and account for more than 30% of Canadian GDP (Government of Canada, 2016). The vast majority of research into the field of productivity focuses on large businesses, research that is of very little use to SMEs in most cases. These statistics make it clear that these smaller enterprises are hugely important to the Canadian economy, but they are largely neglected by academic research, they do not typically invest in their own research, and as such approximately half of SMEs will not even make it to a 6th year of operation (BDC, 2018). Interestingly, this may be the opportune time to rectify some of these issues with the smaller firms in Canada's economy, as something that has the potential to be a revolutionary technology has recently come to light. There have been, and will be, disruptive changes occurring as a result of block chain technology and the emergence of the crypto economy.

This paper will explore how emerging technologies, all of which have become available because of Blockchain innovation, can be leveraged for productivity growth and competitive advantage. Blockchain technologies can also circumvent some of the many financial difficulties with overseas transactions, they are used for digital currencies that are useable throughout the globe. These will almost certainly have tax implications and produce exchange rate risk, but regulation will likely soon be introduced to address this. Given Canada's current net export position currently being negative, resolving some of the financial complexities of exports may assist in the current import-export imbalance. Similarly, innovations in blockchain contracts could vastly expedite a lot of certification and verification processes that currently hinder the export process. Specifically, the paper will explore how these technologies can be leveraged to minimize the competitive gap between SMEs and larger companies.

Keywords—Canada, productivity, small and medium sized enterprises (SME), blockchain technology, digital currency, and smart contracts.

Introduction

Since its inception as the underlying technology of Bitcoin the Blockchain technology has now crawled out its infancy into its adolescent stage. We are now squarely in the midst of what is being dubbed the Blockchain revolution. The world has witnessed the market cap of bitcoin rise to \$17.5 billion dollars (although given its value variance this number is constantly fluctuating) and seen the emergence of over 1500 new crypto-currencies. Although the crypto-market is still quite volatile, the underlying and new generation blockchain technology platforms such as etherium, blooms, NEO, IOTA, Stellar (and many more) present new promises to the business world. A slew of start-ups, large businesses, financial institutions, and even governments are now exploring the possibilities associated with leveraging the new technology for a wide range of services such as digital payments, money remittances, smart contracts, microcredit loans, fundraising, and others.

The creation of a fast and secure scale Blockchain “is showing new promises for the internet of things (IoT) and the banking world by going head to head with payment middlemen such as VISA and SWIFT”(Gupta, 2017). The usages of blockchain technologies in industry have also exploded, with over a billion dollars invested in blockchain companies worldwide since 2009 when it was created. Initial coin offerings, ICOs (something akin to going public, with share ownership being shown on a blockchain), have been increasing vastly in both quantity and amount of capital raised. Data from CoinSchedule (see Table 1) indicates that globally firms raised US\$3.7 billion in crypto-currency from ICOs in 2017, US\$3.3 billion in the first quarter 2018 (CoinSchedule, 2018).

Table 1: Cryptocurrency ICO Stats			
	Total US\$ Raised		
	2016	2017	2018
Jan	\$0	\$15,358,278	\$879,038,185
Feb	\$0	\$25,460,157	\$887,111,349
Mar	\$11,200,000	\$18,660,713	\$1,599,960,624
Apr	\$0	\$81,427,029	-
May	\$18,789,734	\$281,012,458	-
Jun	\$972,798	\$516,537,695	-
Jul	\$1,526,342	\$417,281,712	-
Aug	\$12,295,227	\$305,986,446	-
Sep	\$11,990,546	\$502,951,511	-
Oct	\$12,469,349	\$498,713,046	-
Nov	\$21,261,061	\$116,706,256	-
Dec	\$4,676,334	\$1,099,922,902	-
Total	\$95,181,391	\$3,880,018,203	\$3,366,110,158

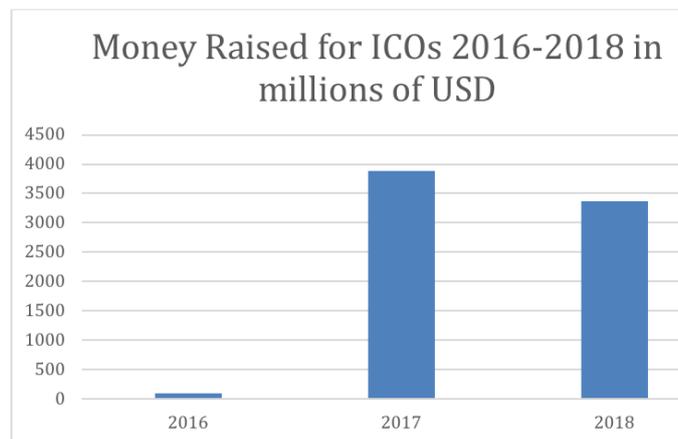
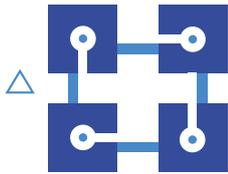


Figure 1. Money raised for ICO's 2016-2018

Until now, most effort to apply the blockchain technology has been directed towards large scale corporations or individuals. Little consideration has been given to how small-sized and medium-sized Enterprises (SMEs) might benefit from this very promising technology. Due to negligible transaction fees that Blockchain technologies operate on, the greatest disadvantage smaller firms have relative to larger firms (inability to reach economies of scale optimization volume) is nearly eliminated. Adopting Blockchain technology could not only help Canadian SMEs be competitive with smaller market-participants, it could also help the SMEs contend with large, and even global, competitors.

A very simplified explanation of Blockchain technology will be provided below. Whilst very difficult to understand in its entirety, in its simplest interpretation the Blockchain is a reliable and decentralized ledger for maintaining and verifying digital records. The applications for this are too many to mention, and there will no doubt be many that have not even been conceived yet, but currently the two biggest applications of Blockchain technology are in digital currencies and smart contracts.

Blockchain



BLOCKCHAIN

While there is a great deal of debate as to how successful specific cryptocurrencies and other blockchain applications will be, there appears to be near consensus that underlying blockchain technology is going to be a big part of the digital world going forward. To form an analogy with the last true digital revolution (the Internet), once it became clear the Internet was going to change the world, there was only one question left: how will it change the world? Blockchain technology is currently exactly in that position; everyone who understands it realises it is about to take the world by storm, but there is no consensus as to what specific applications of it will become commonplace. With the inception of the Internet, it was near impossible to foresee the emergence of sites like Google, and Facebook, and even if one had foreseen the general ideas of search and social media it was near impossible to know specifically which innovator in the space would become market leader.

Explaining the blockchain concept in full is extremely complicated. There are entire books dedicated to the matter, and to implement it in a useful way requires a reasonably high degree of technical knowledge. Fortunately, the essence of what the technology does is relatively straightforward. It allows for a public ledger of transactions (in the broadest sense of the word) to be maintained and be available for all to see. In fact, the maintenance of said ledger is achieved by making it available to everyone (for a public blockchain); it is known as a *distributed ledger*. There are only a few critical concepts to the technology: a transaction between two participants cannot be falsified, and no one person is in charge of maintaining the ledger (there are potentially thousands of redundancies). Phrased another way, “A blockchain is a peer to peer distributed ledger forged by consensus, combined with a system for smart contracts and other assistive technologies” (Hyperledger.org).

To take the most obvious application, one might consider a private ledger such as PayPal. With PayPal, everyone’s balance is maintained by PayPal verifying all transactions and adjusting members’ totals accordingly. For example if member A has \$100 and member B has \$100, then member A sends \$50 to member B, the new balances are A has \$50 and B has \$150. In PayPal, only the two participants and PayPal are aware of the transactions and balances. With the blockchain public ledgers, all participants can see the transactions, and they know all participants’ balance. In essence, instead of having to trust a third party (such as PayPal) the participants all know each other’s balances and see every transaction that occurs. One might wonder why this whole new system has emerged for something that PayPal and others have been doing well for many years.

There are both obvious and more subtle benefits to moving to a Blockchain based system, four of which IBM has highlighted recently (IBM, 2017). The most obvious benefit is that it takes the *trust* issue out of the transaction. Although PayPal has a reasonably good reputation, anyone who uses PayPal has to agree to the company’s terms of service and hope the company chooses not to take illegal advantage by manipulating the balances. Blockchain based currencies eliminate middle-men and can verify and establish payments. Not only does this have a trust benefit, but it can also potentially do this much faster than any intermediary. Intermediaries also take a fee, and most blockchain based transactions result in a much lower transaction fee (sometimes no transaction fee). Reduced risk is perhaps a less obvious benefit, but one must consider the danger of a private centralized ledger. Imagine if someone were to successfully hack PayPal and mess with people’s balances, the consequences would be dire. With blockchain technology participants who wish to can maintain a copy of the ledger, so there is no one person or business a hacker could target. Similarly if someone is attempting to manipulate the larger system, there are many eyes on the ledger and a hack attempt will be immediately spotted, whereas at PayPal only the intermediary is responsible for protecting its ledger.



Public vs Private Blockchains

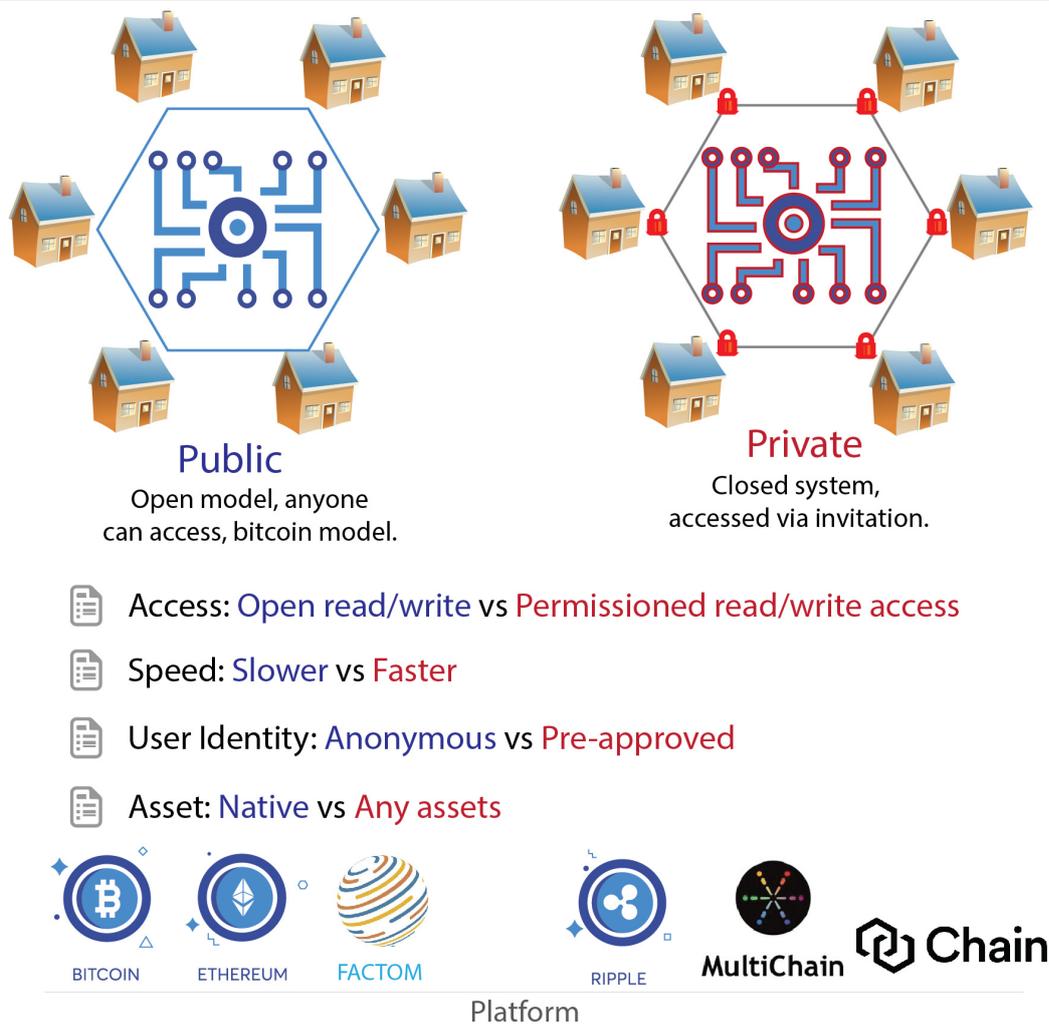


Figure 2. Public vs Private Blockchain

According to IBM (2016), “blockchain is a technology that consists of a ledger, a consensus algorithm, and a means for performing transactions on that ledger. Ultimately, blockchain allows companies to build trust, reduce costs, and accelerate transactions.” Current business processes associated with record keeping and transactions among parties are expensive and inefficient because duplication of data and intermediaries adds cost and time. Blockchain is a brilliant solution to this problem as the shared ledger technology allows participants in the network to see the relevant ledger. The two types of Blockchain currently in use are public and private. As can be seen in the figure above, the public Blockchain and private Blockchain are both decentralized, however in a private one access is only granted through invitation.

To summarise, blockchain is a combination of distributed database, peer to peer transmission, transparency with pseudonymity, irreversibility of records, and computational logic (Casey & Wong, 2017). In today’s business world, processes associated with recordkeeping, financial transactions, security etc. are problematic, which makes the firm inefficient, expensive, and vulnerable. Blockchain technology can be used to solve business problems using shared ledger, smart contract, secure and verifiable transactions, and improve trustworthiness of the brand. SMEs should be able to leverage the blockchain technology to facilitate digital payments, increase security, manage stakeholder’ digital identity, maintain supply chain integrity and validation, handle fundraising, produce smart contracts, and to do many other things.

Digital Currency

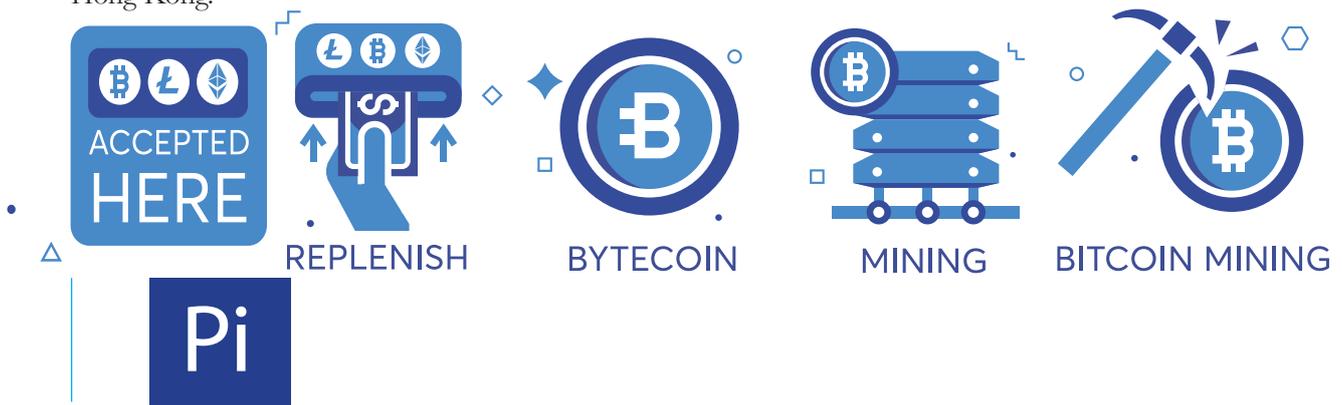


The blockchain technology has solved a problem that until recently had made it too problematic to have an open distributed ledger. To explain that more simply, until recently the only way to digitally transact securely was to use a third party intermediary (such as VISA or PayPal). Those companies tracked who had made payments to whom, and maintained a ledger reflecting all transactions and members' balances. Through a series of innovations, the blockchain allows everyone to have access to the ledger and independently verify all transactions. The reason this is so beneficial is that what is essentially an intermediary (like VISA or PayPal) is no longer required. Not only does the blockchain massively reduce fees associated with ledger maintenance, but it also guarantees that no member is required to place faith in a third party.

To clarify the importance of these ledgers, replicating digital assets is extremely easy. It is a problem known only too well by the software industry that loses perhaps billions per year due to software piracy. As such, simply trying to make unique digital assets and limiting them in number like a currency (there are only so many actual physical bills in dollars that are in circulation) is not possible in the traditional sense. However, with a ledger that is constantly being verified and updated by several participants, it now becomes possible to track people's positions or balances. The cryptography aspect is about making sure nobody can impersonate someone else. With all of those aspects combined, it is possible to maintain a functioning ledger that everyone can see and nobody can manipulate to forge fake transactions.

Assuming that people start accepting the currency, international transacting will become easier than it has ever been. First, the need to exchange the currency is an obsolete notion, as both parties will theoretically accept the cryptocurrency. Wire transfers of large amounts of money can take days to complete, whereas with cryptocurrencies it can be done in just few minutes. Of course, given the explosion of digital currencies in recent months several countries are introducing related regulations and this makes it hard to predict to what extent these non-government backed cryptocurrencies will fare. However, it is worth noting that even some governments are planning to make use of cryptocurrencies, and that could have massive implications for global trade.

While there are several huge social implications digital currencies could potentially have in the near future, there is one happening already that stands out: the remittances implication. Western Union and MoneyGram have dominated the remittances market for many years, and they charge very hefty transaction fees. By using cryptocurrencies based on blockchain technology as a base, many companies are emerging to facilitate international remittances. This is especially useful when the currency in which the money is earned is not the same as the currency where the money is being sent. This is actually increasing the incentive to work abroad, as a larger portion of money earned is making it back to the country in which it is to be spent. It is the equivalent of a tax cut or pay rise for these workers. As such, we can expect immigration to more wealthy countries to increase, all other things being equal. Some companies currently making use of the new opportunities cryptocurrencies offer in the remittances markets are Abra, Align Commerce, Bitspark, Soins.ph, Coinpip, BitPesa, Volobit, and Veem (Medici, 2015; CNBC, 2018). As one would expect given the global "indifference" of the blockchain technology, these companies are based all over the world and some serve multiple markets. Countries that seem to be most targeted at present are the United States, Mexico, African countries, Philippines, Singapore, and Hong Kong.



SME Application

Small business applications for smart contracts are too numerous to mention. In short, almost every type of agreement can be simplified or improved by enforcing it via the blockchain. Essentially, whereas typical contracts are arranged and enforced by involving one or more third parties (usually a government), smart contracts are enforced by software in a perfectly consistent manner. This is true to the extent that the conditions for agreement can be set beforehand. For example, if a supplier asks for payment upon delivery, a contract can be arranged whereby an amount of digital currency is placed in a “locked” account that is visible but not accessible to everyone except the small business who owns it. When the delivery is received and checked, the buyer can then confirm receipt, at which point the amount can be transferred to the supplier automatically. This receipt confirmation will be part of the smart contract, and the confirmation will trigger enforcement of the transfer by the blockchain participants. Especially for smaller companies, such arrangements without smart contracts require a great deal of background checks and sometimes letters of credit (when international trade is involved). These are all eliminated with a blockchain solution. As with currency benefits, larger companies have a “trust advantage”, whereby customers and suppliers are much happier transacting with them because of an established reputation. This is a barrier to entry and general disadvantage for smaller firms. By placing the burden of security into the blockchain, a large portion of that advantage is eliminated. To put it in the simplest terms possible, smart contracts make it just as safe to transact with smaller firms as it is to transact with larger firms in most cases.

Exporting in general is more difficult for small firms. Even for domestic suppliers and customers, trust can be an issue. For international trade the additional barriers of language and large distances become a factor. Smart contracts in combination with digital currencies are not scale-dependent. They allow all stakeholders in a contract (in an international transaction that may involve suppliers, banks, port authorities, transportation companies, and more) to keep track of progress and be updated in real time. This eliminates the likelihood of errors, the issue of trust, and almost eliminates all expenses incurred for contract enforcement. This probably seems like a trivial benefit for those who have dealt exclusively with developed countries, but there are many nations in which the governments themselves cannot be trusted. They may not enforce contracts or they may change contracts on a whim (overtly or otherwise). As such, many of these markets are inaccessible, especially for smaller firms. With a smart contract, the ability to alter documents is to all intents and purposes non-existent. As such, there is no longer a problem of a government being an “unreliable link” in the transaction chain, at least in terms of assuring that contracts go unaltered. For SMEs this vastly increases the countries with which they can now do business. Historically, very few western SMEs have been able to trade with anyone but western developed countries, but blockchain applications could soon make true global trade a reality for smaller firms.

The distributed ledger technology offers new promises for the financial industry. According to Spanish banking giant Santander, “Using distributed-ledger technology could help financial services providers lower the worldwide cost of cross-border payments, securities trading and compliance by \$15-20 billion per year by 2022” (Economist, 2017). The widespread adoption of blockchain and cryptocurrency will transform the financial industry drastically, it will make our societies less reliant on cash, which will lead the central banks to introduce their own digital currencies as a substitute to their already circulated fiat money. Smart contracts will have implications on future banking and insurance payouts. The Economist Intelligence Unit predicted that the “Blockchain could help open up cheaper, non-bank financing to small and midsized firms, which provide two thirds of all jobs in Europe” (Economist, 2017).

This nascent technology has already been adopted by digital start-ups across the world to offer wide ranges of services. The New York based ConsenSys developed the blockchain based equity crowdfunding platform known as WeiFund, and the movie Braid is the first feature film to be partially funded through this etheruem based WeiFund platform. Another New York firm Symbiont Smart Securities® technology (symbiont.io) provides institutions with a unified ledger for sharing business logic and market data. The Swiss firm known as On-Demand Education Marketplace (ODEM.io) is a platform that aims to provide learners and teachers with a flexible educational hub where they can directly connect, plan and confirm in-person courses. (Dickson, 2018). The Utah based tZero (www.tzero.com) offers smart securities for existing market processes to reduce settlement time and

costs, increase transparency, efficiency and auditability. Bitwage (www.bitwage.com) helps to find remote jobs in the USA, EU, and UK, and also offers bitcoin payroll and international wage payment services. Atlanta based Storj (storj.io) is about to launch a decentralized blockchain-based storage solution. California based ShoCard (shocard.com) offers a virtual identity card for mobile devices. Another California based firm Gyft Block (gyft.com) developed a blockchain application that will store your gift cards on mobile devices. Nevada based Filament (filament.com) software and hardware solutions enables enterprise and industrial internet-of-things (IoT) connectivity.

Slock.it is Germany based Slock.it is in the process of developing infrastructure for the sharing economy; one of their products is an ethereum-enabled [blockchain development platform] IoT platform. The application can be used to automate services such as Airbnb, car or bicycle rental, and other shared rental services for smart devices by using smart contracts, and paying each other using a decentralized platform. Digital startups such as xbsoftware, a Belarus based company, are already emerging offering blockchain services to various business types, ranging from the healthcare sector to the financial sector. Aside from payment and automation, they focus heavily on document and record security. Highly sensitive information, such as a person's medical records, can be secured on the blockchain. This allows the information to be easily shared, but only with those who have the permission to view it. As the technology becomes more commonplace, it will be made available to smaller firms with the aid of firms similar to the aforementioned xbsoftware. This will only happen once competition, in both blockchain service and consulting firms, grows substantially.

With regards to how digital currency can potentially be exploited by SMEs, there are myriad benefits. First, there are currently a limited number of firms accepting digital currencies (and those that do typically only accept bitcoin) as a means of exchange. As such, the supply of goods and services for people wishing to make purchases in bitcoin is limited. By jumping onto the supply side of the market, there will likely be much less competition than in traditional currency markets. It should be noted that because of the high volatility in crypto currencies, a premium should be charged to protect against sharp drops. Businesses should also quickly convert digital currencies to dollars, which can be done on several exchanges nowadays. An agreement can be made to refund the premium as soon as the transaction goes through, if the exchange rate has not moved unfavourably for the SME. This offers protection for the SME, and because the consumer has close to zero transaction fees, this is not particularly burdensome assuming said customer permanently holds a certain balance of cryptocurrency.

Assuming certain cryptocurrencies become more “mainstream”, which seems increasingly likely, many businesses will start accepting them. At that point, consumers will expect to be able to pay in such a manner, much as these days there is an expectation that online enterprises will accept MasterCard, VISA, and other payment intermediaries. Unlike with most payment systems, at least in the case of some cryptocurrencies (except for ones that are allowed to incentivize faster transactions by offering an additional amount to the ultimate verifier) there is no benefit to economies of scale. As the system works currently, taking PayPal as an example (though it applies to all payment intermediaries) the higher the volume of currency received the lower the transaction percentage PayPal will take. This puts SMEs at a large disadvantage, because in addition to any production economies of scale their large firm counterparts receive, SMEs also lose out on the economies of scale on the transaction side. Cryptocurrencies could eliminate the transaction side economies of scale, and therefore make SMEs partially more globally competitive against larger competitors.



Table 2. Blockchain Potential Application by Industry

Industry	Digital Currencies	Smart Contracts
Financial	Automated trade execution using smart contracts could also be done by making use of digital currencies. In fact, humans may not even need to be involved in particular transactions. A program can be written to execute transactions with a digital currency wallet not officially associated with a person or corporation (although most likely after regulation it will at least need to be registered to a corporation).	Automated trade execution based on share and indices prices. Exercising options, settling swaps, and countless more financial instruments or arrangements can be organized through smart contracts.
Healthcare	Supplier payments, insurance payment receipts, and patient payments in private hospitals can all be done through digital currency.	Securing and distributing patient data to relevant parties. These include the patient, certain doctors, certain hospitals, and potentially insurance companies.
Education	Tuition fees, scholarship payments, and staff payments can all be arranged through digital currency.	Securing and selectively sharing student data.
Supply Chain	Alongside product flow, financial payments usually follow in the opposite direction. When tied with a smart contract, digital currency can be used to handle auto-payment when certain smart contract terms have been fulfilled.	Indicating product flow monitoring and supply chain partner statuses. With smart contracts getting permission to move onto the next process phase can be automatically triggered when certain criteria are met (for example acknowledgment of receipt).

Considering the extensive scale-independent benefits, SMEs could stand to benefit greatly from blockchain technologies such as smart contracts and digital currencies, and quite possibly several others that are either not yet mainstream or simply have not been devised yet. In fact, the blockchain innovations may actually make SMEs more competitive with their larger competitors, so they will serve as a partial ‘gap-closer’ between rivals on the supply side of market economics. This is both great for SMEs and consumers, at the very least in the short run but possibly longer.

Conclusion

The blockchain revolution has already begun, however like any other technological innovation, widespread blockchain adoption across various industry verticals will have its own advantages and challenges. Blockchain will spur new waves of innovation and offer disruptive digital solutions for SMEs. First movers will have the competitive advantage and prevail; a risk averse culture will struggle to keep up with digitization and lack prosperity in the new digital age. Regulators need to work side by side with the industry leaders, as the current regulatory framework does not support the widespread adoption of the Blockchain technology. It also poses new challenges for regulators as they need to prevent criminal uses of the technology.

Many firms, including established market leaders (such as Wal-Mart) have begun making use of blockchain technologies to seize market opportunities, secure information, accept more forms of payment, and make use of smart contracts in various forms. The blockchain is also making it practical for the first time to track products reliably through the supply chain with little ability to change information along the way. Coca cola is using the technology to ensure forced labour is not used at any point along its supply chain (Reuters, 2018). BMW has done something similar to ensure child labour is not used at any point in the production of its batteries (Huynh,

2018). One would imagine the honorable firms in garment industry, which has long had a notorious reputation for child labour usage, will soon follow. The reason the blockchain makes this possible is that historically it has been very easy to make changes to documents with just one bad actor along the supply chain without anybody noticing (and even those who do notice to more easily turn a blind eye if it is seen to be in their interest). However, with the blockchain the records are immutable (cannot be tampered with), and therefore it is very easy to pinpoint who is to blame if illegal labour has been made use of.

There are off course sinister uses for blockchain technology, particularly on the dark web. The numerous heinous applications and aspects of the blockchain is that it has drawn the attention of regulators. At the moment the focus is primarily on digital currencies, but presumably eventually there will be general blockchain regulations and additional specific blockchain application regulations. These will have vast consequences regarding which blockchain applications are going to revolutionize the world and which will not. For example, in terms of digital currency, the G20 is considering defining such currencies as assets and not money (Shankleman, 2018). This is very important because if money increases in value (for example a dollar can buy more of a good this year than it could last year) then there are no tax consequences. However, if digital currencies are deemed to be assets, they will be subject to capital gains tax. This would be a major blow to the appeal of digital currencies, and is just the most recent example of how regulations could shape the blockchain landscape.

Considering SMEs in particular, the blockchain benefits are largely scale independent (meaning that there is not much gain from economies of scale: the strongest barrier to entry and competitive hurdle for newer and smaller firms). This technology could prove to be the great equalizer between smaller and larger firms. It also offers benefits in four major areas: payment acceptance, identification, asset management, and smart contracts (Xavier, 2017). SMEs often struggle with the payment flow aspect of business. They are often not equipped to deal with any unexpected payment delays. Smart contracts can do away with that concern and reduce payment delays in general. Smaller firms are also more vulnerable to fraud, as blockchain identification is far more reliable than traditional verification methods. The supply chain efficiency benefits mean that there is almost no waste or unnecessary delay in the product and payment flows, hence asset management and optimization benefits are realised. Smart contracts make transacting with a new entity for the first time extremely easy, with almost no vetting required if the counterparty has an identification and transaction history on the blockchain. This can provide SMEs with a flexibility they have never experienced before, as historically they have had to be very cautious when switching suppliers or choosing new partners.

To help foster an environment where such technologies can thrive, the government will need to provide some regulatory guidance. The factors of production (land, labor, capital, and entrepreneurship) will be reallocated if this new technology does indeed reshape the world economy, as many believe it will. The government's role in this will be to help facilitate this change as smoothly as possible, particularly as it relates to the labor market.

The emergence of blockchain technology has the potential to revolutionize the world in several ways, particularly for businesses. This can be seen simply by how many vast companies have begun to experiment with blockchain applications already. However, it is an extremely complicated technology even before application-specific adjustments are made, which only serve to make it even more complex. This is the greatest hurdle for widespread adoption at the moment, even in businesses to business applications. In order to get the most out of the technology, all relevant parties must be participating, so every level of an industry vertical (comprised of supply chain partners) must ideally be making use of the blockchain to see its full benefits. Given how recently awareness of the blockchain became mainstream, the next few years are likely to see the most innovation in this technology space. As with all innovations, this will pose great opportunities and threats to existing businesses who will find themselves having to adapt quickly. However, this is also extremely good for SMEs whose greatest advantage over larger firms is their ability to adapt quickly because they are not encumbered by the weight of the necessary structural intermediaries needed to run a large organisation. However, it will also mean (at least for medium sized enterprises) that having someone with a strong understanding of blockchain technologies will be necessary. To foster the kind of environment where businesses can thrive by making use of blockchain technologies, particularly SMEs, a collaboration among industries, government, and academia will be imperative. This may well be the key to closing the productivity gap between Canadian SMEs and their strongest global counterparts.



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KING



DIGITAL KEY



LITECOIN MINING



RICH



DECENTRALIZED



BITCOIN TRAFFIC



STOCKS



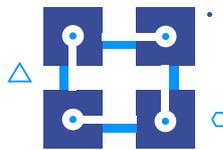
ZCASH



WALLET



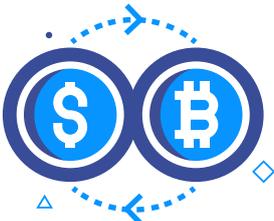
BITCOIN



BLOCKCHAIN



HOUSE OF BYTECOIN



EXCHANGE



INFORMATION



VALUE



ENCRYPTION



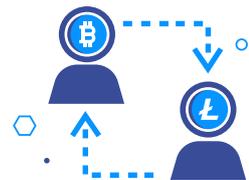
PAY WITH BITCOIN



RIPPLE CALCULATOR



ETHEREUM



PEER-TO-PEER



MONERO



PAYMENT SYSTEM



ENCRYPTED



DISTRIBUTED LEDGER