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Articles

Conflict in the Crimea Through the Eyes of the Onlooker: Socio-Political Causes

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Abstract

Rarely in history does a war upset the geo-political hierarchy and alter the balance of power of nearly an entire continent as the Crimean War. A culmination of decades worth of religious strife and heated sectional tension, the conflict's legacy reaches far past its almost 500,000 total casualties and the atmosphere of its aftermath continues to linger in and influence today's political landscape, nearly 150 years after the bloodshed. This paper will examine the socio-political causes at play among the inhabitants of belligerent nations and the region over which the war was fought, aiming to paint a more complete picture of the lead-up to one of history's most misunderstood wars through the eyes of the onlooker and historians.

1   The Holy Sepulchre

The Church of the Holy Sepulchre is one of the most important religious sites for Christians worldwide. Located in the northwest quarter of the Old City of Jerusalem, Israel, it was built nearly two millenia ago in 335 C.E. by the Roman Emperor Constantine the Great. The church is jointly controlled by several Christian denominations, including the Greek Orthodox, Roman Catholic, and Armenian Apostolic churches. Within its walls, Calvary, the site of Jesus' crucifixion, and Edicule, his empty tomb, are housed. These two sites are of immense

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significance to Christians, as they represent the death, burial, and resurrection of Jesus Christ.

Figure 1: Jon Arnold. An aerial view of the Holy Sepulchre and the Old Quarter. In the public domain.

The Holy Sepulchre has a long and tumultuous history, having been torched by the Sassanids in 614 and sacked by Fatimid Caliph Al-Hakim bi-Amr Allah before being rebuilt. It has endured to the modern day despite its tumultuous past and remains a site of great significance in the various conflicts between Christians and Muslims in the Holy Land. The church has also been the site of numerous internal disputes between different Christian sects, including the Greek Orthodox, East Orthodox, Franciscans, and Roman Catholic, which have caused divisions and strife.

During the period in which the Sepulchre was under Ottoman control, tensions between different Christian sects were more divisive and violent than ever. For instance, Easter in 1846 fell on the same date in the Gregorian and Julian calendars, leading to a collapse in the fragile balance between Christian pilgrims. When Catholic priests arrived on Easter morning, they found that the Greeks had beaten them to the altar. Figes writes that the "Catholics demanded to see the Greek's firman, their decree from the Sultan in Constantinople, empowering

Figure 2: Oded Balility. An overhead view of the Edicule. In the public domain.

them to place their silk cloth on the altar first. The Greeks demanded to see the Latins' firman allowing them to remove it" (Figes 2012, p. 2). This led to a violent encounter as pilgrims and priests from both sides fought with crucifixes, lamps, chandeliers, knives, and daggers. Nearly forty worshippers were left dead.

British traveler and sociologist Harriet Martineau documented the chaos that erupted in 1846 in her three-volume piece, Eastern Life: Present and Past. She notes Jerusalem is the most sacred place in the world, except Mekkeh, to the Mohammedan: and to the Christian and the Jew, it is the most sacred place in the world...What are they doing in this sanctuary of their common Father, as they all declare it to be? Here are the Mohammedans eager to kill any Jew or Christian who may enter the Mosque of Omar. There are the Greeks and Latin Christians hating each other, and ready to kill any Jew or Mohammedan who may enter the Church of the Holy Sepulchre. And here are the Jews, pleading against their enemies, in the vengeful language of their ancient prophets. (Martineau, 1848, p. 380)

2   Religious Fervor and Competition

In the 1820s and 1830s, the rise of the railroad and steamship industries made it possible for an unprecedented number of people to travel to the Holy Land whenever they wished. As a result, there was a surge of pilgrims belonging to various religious sects, including French, English, Italian, Prussian, Armenian, Serbian, Moldavian, Bulgarian, Greek, Austrian, Russian, and Ethiopian Christians. The influx of these tour groups led to intense competition among the religious orders to gain control over the Holy Places and the Sepulchre. Figes notes that "between 1842 and 1847, there was a flurry of activity in Jerusalem" (Figes, 2012, p. 3). For instance, between 1842 and 1847, there was a flurry of activity in Jerusalem, with various religious groups establishing their presence. The Anglicans established a bishopric and diocese in the Old City quarter, while Pope Pius IX appointed a Latin patriarch for the first time since the Crusades. The Greek patriarch strengthened his hold over the Orthodox Patriarchate, and the Austrians set up a Franciscan printing press that is still in operation today. Eager to expand their influence in Jerusalem, the Russians established an ecclesiastical mission in Jerusalem in 1847 to oversee the 15,000 Orthodox pilgrims that traveled annually to the Holy Places for Easter celebrations. However, for the Orthodox, pilgrimage to the Holy Places was not just a leisurely activity, but a means of experiencing Christ personally. No territorial boundaries or jurisdictional restrictions, the reasoning went, ought to interfere with thousands of years of Russian Orthodox pilgrimage to the Holy Places–for all Orthodox felt a genuine connection to a "higher spiritual authority." Such ideas of the Holy Places forming a bridge between Holy Russia and the Spirit permeated the thought of Russian theologians at the time. The concept of a Holy Russia developed along the philosophy that, in the words of Kapral Hilarion, "in order to be a genuine Russian, one must first become Orthodox and live a life in the Church, as did our forebears, the founders of Holy Russia!" (Hilarion, 2013, par. 3). This was a uniquely Russian sentiment. No Frenchman or Englishman, no Protestant or Catholic, Anglican or Franciscan, could fathom such an intimate religious connection to a mere building. Rather, they regarded the Holy Places as mere places of "historical interest and romantic interest rather than religious devotion" (Figes, 2012, p. 4). The Russian and Greek Orthodox traditions were often regarded with disdain by Catholics and Protestants, who were repulsed by their perceived "barbaric" practices and intense displays of religious devotion. For example, Martineau refused to witness the washing of feet with holy water

by Orthodox pilgrims at the Holy Sepulchre on Good Friday, "I could not go to witness mummeries done in the name of Christianity compared with which the lowest fetishism on the banks of an African river would have been inoffensive" (Martineau, 1848, p. 320).

Martineau refused to attend the lighting of the Holy Fire on Eastern Saturday: Miraculous flames used to shoot out, red and green, from apertures on each side of and behind the altar; and the pilgrims rushed to light their torches, throwing each other down, and trampling to death more or fewer who could not stand the rush. (Martineau, 1848, p. 321) The pilgrims, typically rival Orthodox groups such as Bulgarians, Russians, and Serbians, would be so consumed with religious fanaticism and desperation to light their torch with the Holy Fire that they would rather risk their lives than back down.

Violent incidents resulting from religious zealotry became more frequent during important Orthodox celebrations, causing many Catholics and Protestants to view the Orthodox as unchristian and sympathize more with Muslims. These incidents shaped Western policies towards Russia during the diplomatic conflicts over the Holy Places, ultimately leading to war. The behavior of the Orthodox was regarded by the French and English as barbaric and in stark contrast to the peaceful and tolerant nature of true Christianity. These negative perceptions were fueled by the increasingly violent scenes of bloodshed.

3   Tensions in the Holy Land

The influx of Russian pilgrims into the Holy Lands alarmed British officials stationed in Jerusalem. Notably, William Tanner Young, a British consul whose goal was to expand British influence in the region, "sent regular reports to the Foreign Office about the steady build-up of Russian agents" in Jerusalem" amid a time when the Russian ecclesiastical mission exerted its influence in the region by funding the construction of churches, schools, and hostels (Talbot et al., 2020). However, it was the French, not the British, who were most distraught by the prospect of greater Russian control over the Holy Lands. The French were granted the right to establish, the French Consulate General of Jerusalem, appoint consuls in the Ottoman Empire in 1535, and given a special status to protect their citizens and Catholic Christians who resided or traded in the Ottoman Empire and Holy Land. King Louis XIII appointed Jean Lempereur as the first Consul-General, but the local Muslim population did

Figure 3: Todd Bolen. (2009). Church of Holy Sepulcher, feet washing ceremony [Photograph]. The American Colony and Eric Matson Collection. CC-BY-NC.

not take kindly to this. Lempereur was embarrassingly detained and deported to Damascus, and many subsequent French Consul-Generals were likewise ill-

Figure 4: Todd Bolen. (2009). Church of Holy Sepulcher, pilgrims with Holy Fire [Photograph]. The American Colony and Eric Matson Collection. CC-BY-NC.

received. Nonetheless, the French still had a much larger stake in the Holy Land than the British, who at the time only had a small diocese and a single Anglican church in the region. Additionally, the French connection to the Holy Land went back hundreds of years to the days of the Crusades. Eager to protect what they perceived as their natural rights to the Holy Land, the French were ready to undertake drastic measures to ensure Latin pilgrimage and access to the Holy Places. Amidst these tensions, the Latins and the Orthodox began to squabble more and more over minute details in the Holy Places at both the Church of the Holy Sepulchre and the Church of the Nativity. The Church of the Nativity, located atop the ancient set of caves known as the Grotto of the Nativity where Jesus was supposedly born, was a frequent battleground. In 1717, the French placed a fourteen-point star with the inscription "Here Jesus Christ was born one of the Virgin Mary" on the floor of the Grotto, as evident by the tricolor inscribed into it. However, in 1847, the star was stolen, "the tools used to

wrench it from the marble floor were abandoned at the site" (Figes, 2012, p. 6).

Figure 5: Adapted from Roberto Morgenthaler. Modern-day replacement of the 14-point star stolen from the floor of the Holy Sepulchre in 1847. In the public domain.

The theft of the lead from the roof of the Holy Sepulchre caused a diplomatic uproar between the Catholic and Greek Orthodox communities. The Catholics immediately accused the Greek Orthodox monks of the crime and lodged a complaint with the Ottoman regional government, the Sublime Porte. Meanwhile, the French, who claimed the keys to the Church at Bethlehem, argued that they had the right to repair the damaged roof, which was in dire need of attention. Both the Greeks and the Latins accused each other of stripping the lead off one side of the roof. However, under Turkish law, the owner of a house's roof was considered to be the owner of the house itself (Figes, 2012, p.7). Theft of the star from the Church of the Nativity in Bethlehem escalated into a bitter contest between Catholics and Greek Orthodox over control of the Holy Sepulchre. The outcome hinged on winning the favor of the Ottoman regional government, which had the power to decide the dispute. In making its case to the Porte for the Orthodox side, Russia cited the 1774 Treaty of Kuchuk Kainarji, which they believed had granted them "a right to act as protector of Ottoman Christians" (Davison, 1976, p. 465). The treaty gave Russia, among other things, "privi-

leges for an expanded commerce that could now move freely on the Black Sea and through the Straits into the Mediterranean, as well as by land in Ottoman domains" and the "right to permanent and prominent diplomatic representation in the Ottoman capital of Istanbul," but did not explicitly state a Russian right to represent the Orthodox Christians of the Ottoman Empire (Davison, 1976, p. 465). Historians are not entirely in agreement on whether the treaty promised Russia the aforementioned right, and referencing a backwater treaty used to settle a war that took place nearly 70 years earlier did not appear to be an appropriate way to settle the dispute in the eyes of the Catholics. The Porte, not wishing to take sides, did not offer a clear conclusion on the matter. Nevertheless, the diplomatic ramifications of the Catholic protest were only yet to take into full force.

4   Russian Expansionism

Ascending to the title of Tsar in 1692, Pyotr Alekseyevich–better known as Peter the Great–set in motion a sway in the European balance of power in the early 18th century. Instituting a program of radical Westernization, Peter required his state, royal, court, and military officials to adopt Western clothing and pay a hefty tax if they wished to keep their traditional long beards and robes. Additionally, Peter began an industrialization effort, revitalized the Russian economy by propping up the mining and lumber industries, and hired German and Italian architects to design Russia's new capital: St. Petersburg (Blackwell, 1968, p. 293). One of Peter the Great's most significant contributions to Russian history was his pursuit of an aggressive expansionist policy to secure a warm-water port on the Black Sea, which was then under the control of the Ottoman Empire. This was in stark contrast to the cold-water ports of the Baltic Sea, which were under the control of Sweden.Russia's intense religious motivation, in which it considered itself the protector of all Eastern Orthodox Christians, resulted in a series of Russo-Turkish Wars spanning from 1686 to 1877 foThese wars were fought over control of the Pontic steppe of Eastern and Southern Ukraine, also known as the Wild Fields, which the Porte viewed as a crucial buffer zone between the Ottoman Empire and the expanding "Russian menace" n 1699, Peter's newly-reformed army defeated the Ottomans, giving him the opportunity to demand from the Turks" a guarantee of the Greek Rights at the Holy Sepulchre and free access for all Russians to the Holy Lands"

(Figes, 2012, p. 11). During the Russo-Turkish War of 1710-1711, Peter the Great ordered his army to invade the principalities of Moldavia and Wallachia (present-day Romania) where the strategically-important Danubian delta lay. He had hoped to inspire a Danubian uprising against the Ottoman forces, but nothing of the sort materialized. However, Peter's insistence on branding conflict with the Ottomans as an "Orthodox crusade" in search of the rights of all Orthodox to freely access the Holy Places influenced Russia's foreign policy for years to come, well into the reign of Nicholas I. Moreover, Peter's hopes that the Danubian principalities would rise up against the Ottomans remained a core idea of tsarist policy and greatly influenced the actions of Catherine the Great, empress of Russia from 1762-1796. Catherine the Great continued Peter's expansionist policies and defeated the Ottomans in the war of 1768-1774, securing a stretch of the Black Sea coastline known as Yedisan, the Kabardino region of the Northern Caucasus, and the warm-water ports of Kerch and Enikale, among other territories. The Treaty of Kuchuk Kainarji, which ended the war, granted Russian shipping vessels free passage through the Dardanelles,Kainarji, which would later come to play a significant role in the French and Russian dispute to the Porte. Russia was granted a stretch of the Black Sea coastline called Yedisan situated between the Dnieper and Bug rivers, the Kabardino region of the Northern Caucasus, the warm-water ports of Kerch and Enikale along the interjection of the Sea of Azov and the Black Sea, and annexed territories belonging to the Crimean Khanate, an Ottoman vassal state (Taki, 2015, p. 12). Russian shipping vessels were granted free passage through the strategically-important Dardanelles–Ottoman-controlled straits connecting the Black Sea to the Mediterranean.

The most significant outcome of the Treaty of Kuchuk Kainarji was Russia's right to intervene in Ottoman affairs under the guise of being the "protector of the Orthodox."Catherine did not attempt to push further and extract more from the treaty as it would draw unwanted attention from the Western powers, who backed the Ottoman Empire as a way of keeping the Russian menace in check. She did, however, dream of "recreating the old Byzantine Empire on the ruins of the Ottoman" and frequently corresponded with Austrian Emperor Joseph II about a plan to expel the Ottomans from Europe and divide the Balkan territories and principalities between the two empires (Figes, 2012, p. 13). No shared Russo-Austrian dissection of the Ottoman Empire ever occurred (ironically, it was the English and French who later pieced the empire apart for themselves), but Catherine remained focused on the Black Sea. Slowly,

Figure 6: From "International and particular straits regime." The Dardanelles and the Bosphorus. In public domain.

Russia tightened its hold over Crimea, expelled the Tatars, and shaped Odesa into a major Black Sea port–bringing it one step closer to domination over the "sick man of Europe." The gradual expansion of the Russian empire was closely followed by the British, who held a significant stake in the Eastern Mediterranean. As the decades passed, the British became increasingly frightened at the prospect of the Russian menace devouring its hard-earned territory in India, or perhaps lashing out at Scandinavia and even attacking Western Europe. These fears were propagated by populist politicians, the most notable being David Urquhart. Urquhart railed against Foreign Secretary Lord Palmerston's emphasis on de-escalating European conflict and maintaining the status quo. Historian Margaret Lamb notes "that "in the 1830s one man and his collaborators were largely responsible for the initial surge of Russophobia. That man was David Urquhart" (Lamb, 1981, p. 330). "The policy of Russia," wrote Urquhuart in the Morning Herald in 1838, "has long been impregnated with the

spirit of deadly hostility to England" (Lamb, 1981, p. 331). Known for his outspoken opinions, he famously asserted that Lord Palmerston was a foreign agent bribed by Russia, a view shared by Karl Marx and Friedrich Engels. Despite their agreement on Palmerston, Marx disliked Urquhart and only valued his perspective on this particular issue. Nevertheless, Urquhart became a major voice in the spread of British Russophobia, and even published his own periodical, The Portfolio, in 1835 (Figes, 2012, p. 75). Through strong political connections, Urquhart pushed his way into becoming secretary of the British embassy in Constantinople and engineered numerous diplomatic scandals such as the Vixen incident to compel Great Britain to declare war on Russia (Figes, 2012, p. 76). Palmerston withstood the pressure, but Urquhart's widespread influence was evident. Spreading his Russophobic views through his various periodicals (he published more than just The Portfolio), Urquhart gained a large following. The assertion that Palmerston was receiving bribes from Russia gained traction in The Times, a prominent British newspaper that had significant sway over the views of the middle class.Urquhart gained such a large following, in fact, that he was even elected to the House of Commons in 1847, where he continued to rail against Palmerston, Russia, and all those who opposed him. His widespread popularity in the House of Commons was undeniable. Continuing the assault against Palmerston, "he even led a campaign to impeach Palmerston for his failures to pursue a more aggressive policy against Russia," writes Figes (Figes, 2012, p. 77). Palmerston, for the time being, remained dead set on maintaining the status quo and preventing escalation, but public opinion on the matter was shifting. Europe grew increasingly anxious about Russia, with popular pamphlets circulating throughout the continent expressing the fears and concerns shared by Western Europe at the time, and reaching hundreds of thousands of readers. The Russian military's recent success in putting down the Polish November Uprising added to concerns about the country's growing military power and contributed to "anxieties about the rapid growth and military power of Russia" (Figes, 2012, p. 88). As many argued that Nicholas I wished to unite all the Slavs and become emperor of the Balkans, Western fears "of pan-Slavism focused specifically on the Balkans, where Russian influence seemed to be on the rise" (Figes, 2012, p. 89). Spurred on by Serbian Slavophiles who practically begged Nicholas to intervene in support of the pan-Slav and Orthodox cause, Russia began a series of Balkan interventions, first with the occupation of the Danubian principalities and the suppression of the Wallachian Revolution of 1848, and secondly with the intervention of the Hungarian Revolution in 1849

(Florescu, 1963, 1). Nicholas, however, stood strong in his affirmation that he was opposed to any pan-Slav or nationalist movement. His intervention in the Balkans was, in his eyes, a mixture of preemptive action and religious motivation. Nicholas, on one hand, intervened so as to prevent the Western powers from doing so and turning the Orthodox nations into Western-oriented enemies of Russia. On the other hand, he also intervened to safeguard the interests of the smaller Orthodox nations and did not shy away from encouraging the nationalist sympathies of the Romanians and Serbians. Publicly, Nicholas deemed the pan-Slavs as dangerous radicals, but privately, starting somewhere during the course of the 1840s, began to somewhat sympathize with their ideology. Mikhail Pogodin, a professor at Moscow University and a lead pan-Slav ideologist of the time, frequently corresponded with the tsar, attempting to sway his mind in favor of supporting the Slavs. Pogodon wrote to Nicholas in 1842: Here is our purpose–Russian, Slavic, European, Christian! As Russians, we must capture Constantinople for our own security. As Slavs, we must liberate millions of our older kinsmen, brothers in faith, educators, and benefactors. As Europeans, we must drive out the Turks. As Orthodox Christians, we must protect the Eastern Church and return to St. Sophia its ecumenical cross. (Riasanovsky, 1959, p. 166) Pogodin wrote to Nicholas again in 1853 to share his grievances with the tsar and show him how Russia was misunderstood by the West. France takes Algeria from Turkey, and almost every year England annexes another Indian principality: none of this disturbs the balance of power; but when Russia occupies Moldavia and Wallachia, albeit only temporarily, that disturbs the balance of power. France occupies Rome and stays there several years during peacetime: that is nothing; but Russia only thinks of occupying Constantinople, and the peace of Europe is threatened. The English declare war on the Chinese, who have, it seems, offended them: no one has the right to intervene; but Russia is obliged to ask Europe for permission if it quarrels with its neighbor. England threatens Greece to support the false claims of a miserable Jew and burns its fleet: that is a lawful action; but Russia demands a treaty to protect millions of Christians, and that is deemed to strengthen its position in the East at the expense of the balance of power. We can expect nothing from the West but blind hatred and malice.... (comment in the margin by Nicholas I: 'This is the whole point'). (Figes, 2012, p. 134) Nicholas remained exposed to the idea of pan-Slavism through various court officials and continued correspondence with Pogodin. While he officially remained opposed to the idea, he likely sympathized with it privately and perhaps even let it control his foreign policy

in the following years. Nicholas' intervention in the Balkan principalities and later in Hungary alienated nearly the entire British public and even managed to sway Palmerston to mobilize and send the Royal Navy to the Dardanelles. The British public and press cheered on Palmerston when he decided to mobilize the Royal Navy at the news of the Russian intervention. They celebrated a foreign policy centered around intervention anywhere in the world in the defense of British liberal values and sympathized with the Hungarian and Romanian refugees who fled the Russian menace and its tyrannical tsar. As the French and British fleets arrived in the Dardanelles, the two nations unified in support of the principalities and the Ottoman Empire and their opposition to Russia, tensions were exceptionally high. "The Tsar instructed Admiral Putyatin to prepare for a surprise attack on the Dardanelles in the event of another crisis over Russia's presence in the principalities," but Palmerston backed down from a conflict, and the allied fleets were sent away (Figes, 2012, p. 99). Stratford Canning, ambassador to Constantinople, and Palmerston became increasingly attached to the idea of strengthening Ottoman sovereignty and dominion over the The European powers aimed to minimize the tsar's efforts to undermine the Ottoman Empire by taking steps to prevent his invasion of the Danubian principalities or coercion of the Porte to settle the Holy Lands dispute. They believed that such actions by the tsar could lead to the outbreak of war, hence the need to take precautionary measures.

5   French Escalation

The July Monarchy, which began with the July Revolution of 1830, lasted until the year of European revolutions in 1848. King Louis-Philippe declared himself as the Roi des Français ("King of the French") instead of the traditional "King of France," emphasizing his popularity among the people and the support he received from the masses.The King, in an effort to avoid offending either the conservative supporters of the previous king, Charles X (the last of the Bourbon monarchs and the Bourbon Restoration of 1814-1830), or the left-wing radicals who advocated for complete democracy and a return to the French republic, adopted the motto of juste milieu, or "middle-of-the-road" (Antonetti, 1994, p. 713). Louis-Philippe, initially well-loved for his populist policies and conquest of Algeria, lost favor among the public precisely due to his overly centrist mindset and refusal to reform the electoral system, which had become increasingly

corrupt in recent years. Protests gave way to violence, and the king was forced to abdicate after 18 years on the throne, giving way to the creation of the Second French Republic. French peasants, having been granted universal suffrage, elected Napoleon Bonaparte's nephew, Louis-Napoleon, the man of the people, to the Presidency in the 1848 election. In hindsight, it may not have been the wisest decision for the French to elect someone with the last name Napoleon, given the history of erratic despots seeking dictatorial power. However, France had become a republic, and Louis-Napoleon was elected as their representative.

On December 2nd, 1851, facing the possibility of leaving office and transferring power, and coinciding with the anniversary of Napoleon I's coronation as emperor, Louis-Napoleon staged a coup d'état that dissolved the short-lived Second Republic. This move resulted in the arrest of party members, the dissolution of the National Assembly, and the granting of dictatorial powers to the president (Price, 2002, p. 34).

The return of a French emperor sparked fears of a Napoleonic revival among the great powers of Europe. Britain recalled its Lisbon Squadron to guard the English Channel, and the future commander of the British forces in the Crimea campaign, Lord Raglan, planned out the defense of London in the event of a French attack. The Tsar "wanted him [Napoleon] to make a humiliating disclaimer of any aggressive plans, and promised Austria 60,00 troops if it was attacked by France," in line with Count Buol, Austrian Foreign Minister (Figes, 2012, p. 101). The latter demanded Napoleon declare his peaceful intentions. Establishing the Second French Empire in his speech at Bordeaux, Louis-Napoleon declared that A spirit of distrust leads certain persons to say that the empire means war. I say, the empire means peace. France longs for peace, and if France is satisfied the world is tranquil. Glory is rightly handed down hereditarily, but not war. (Bonaparte, 1852, p. 1) There was, however, reason to be mistrustful of Louis-Napoleon. Louis-Napoleon's intentions may have always been to upset the existing balance of power in favor of France, much like his uncle had attempted to do 40 years earlier. Napoleon I, who was revered by his people for his military victories, loyal leadership, and reforms, had his imperial ambitions thwarted during his ill-fated 1812 invasion of Russia. Russia emerged as the obstacle in the French Empire's path, and removing this obstacle would be the only way for Louis-Napoleon to restore national pride to France. Figes notes that The conflict in the Holy Lands served as a means of reuniting France after the divisions of 1848-9. The revolutionary Left could be reconciled to the coup d'etat and the Second Empire if it was engaged in a

patriotic fight for liberty against the 'gendarme of Europe.' As for the Catholic Right, it had long been pushing for a crusade against the Orthodox heresy that was threatening Christendom and French civilization. (Figes, 2012, p. 102). To unify the French people behind his regime, Louis-Napoleon exploited the trend of blaming Orthodox Russia for France's problems. This strategy required a common enemy for the French people to rally against and support the president. Thus, he appointed the extreme Catholic Marquis de Lavalette as ambassador to Constantinople, a member of a highly influential lobbying group at the French Foreign Ministry. Duc de Persigny, Minister of the Interior, wrote scathingly of Lavallette's exploits. "Our foreign policy was often troubled by a clerical lobby which wormed its way into the secret recesses of the Foreign Ministry. The 2 December had not succeeded in dislodging it. On the contrary, it became even more audacious, profiting from our preoccupation with domestic matters to entangle our diplomacy in the complications of the Holy Places, where it hailed its infantile successes as national triumphs. (Persigny, 1896, p. 225) The lobbying group's interference was so significant that Lavalette's exaggeration of the importance of the Holy Places began to take center stage in the Foreign Ministry. His "aggressive proclamation that the Latin right to the Holy Places had been 'clearly established,' backed up by his threat of using the French navy to support these claims against Russia, was greeted with approval by the ultra-Catholic press in France" (Figes, 2012, p. 103). Napoleon himself was of a more moderate disposition, but he understood that his legitimacy as emperor rested on Catholic opinion. He did not restrain Lavalette and let him continue pressuring the Sultan into minute concessions for Catholics in the Holy Places. Even after Napoleon was forced to recall Lavalette in 1852 due to complaints by British Foreign Secretary Lord Malmesbury, the pressure on the Ottomans to make concessions in the Holy Places in hopes of provoking the Tsar into launching a European conflict, and thus forcing Britain to ally itself with France, continued to dominate French foreign policy.

In 1852, the Sultan, Abdulmecid I, caved. The Porte granted Catholics the right to hold a key to the Church of the Nativity in Bethlehem, which gave them permanent access to the sacred Chapel of the Manger and the Grotto. The Tsar, understandably furious, mobilized 128,000 troops for an attack on Constantinople and a wider Danubian campaign. Nicholas, with the support of the members of his court, published a memorandum in 1852 detailing his plans for the partition of the Ottoman Empire and the occupation of the Danubian principalities. The Tsar was under the impression that he had the support of the

British and could rely on them to intervene and restrain the French whenever necessary to uphold Russia's treaty rights in the Holy Places.

Nicholas set out to convince the British that the time was ripe for the partition of the Ottoman Empire by conversing with Lord Seymour, the current British ambassador to Russia stationed in St. Petersburg. He referred to the Ottoman Empire as the "sick man of Europe" and doubly underscored the significance of a joint Russian and British partition in order to prevent the French from undermining the empire's sovereignty. Seymour was not opposed to the Tsar's plans and even seemed to welcome them. Writing to Foreign Secretary Lord John Russell, Seymour argued that it would seem logical for the two European powers "most interested in the destinies of Turkey" to partition the Ottoman Empire and restore Christianity to the forefront of the balance of power (Cunningham, 1993, p. 136). Despite the fact that many members of Parliament and Lord Aberdeen's government, including Russell, did not support the idea of supporting the Ottomans while they were persecuting Christians, Nicholas believed that he had the ear of the British government. In 1853, he dispatched an envoy to Constantinople to restore Russia's rights in and access to the Holy Places, even though it was uncertain whether Britain would support him. The envoy was Prince Alexander Menshikov, a veteran of the Russo-Turkc War of 1828-9. A stern, experienced 65-year-old man with a highly independent character, Menshikov earned the liking of Seymour, although the latter did pick up on the veteran's disposition. "If it were necessary to send a military man to Constantinople the Emperor could hardly have made a better selection. . . than he has done; it is however impossible not to reflect that the choice of a soldier has in itself a certain significance, and that should a negotiation. . . prove ineffectual, the negotiator may readily become the commander who has authority to call in 100,000 soldiers and to place himself at their head" (Seymour to Russell).

Menshikov set out with instructions to Demand from the Sultan the nullification of the November ruling [referring to the 1852 Ottoman ruling granting Catholics privileges] in favor of the Catholics, the restoration of Greek privileges in the Holy Sepulchre, and reparation in the form of a formal convention or sened that would guarantee the treaty rights of Russia (supposedly dating back to the 1774 Treaty of Kuchuk Kainarji) to represent the Orthodox not just in the Holy Lands but throughout the Ottoman Empire. (Figes, 2012, p. 108) Should the French bar Orthodox access to the Holy Places, in particular the Holy Sepulchre, Menshikov was instructed to propose a defensive pact between

Russia and the Ottoman Empire as a part of which Russia would pledge a fleet and nearly 400,000 troops for the Sultan to call on. The chances of success were very slim as it was unlikely that the Ottomans would agree to the sened, which practically rendered the empire a Russian protectorate. Additionally, Menshikov's behavior alienated the Turkish ministers in charge of the Ottoman side of the procedures. His continued strong-arming and bullying combined with his never-ending threats of Russia breaking off relations with the Porte made them more inclined to turn to the British and the French. Despite Russell's insistence on military intervention, the British cabinet refused to send a fleet to the Aegean Sea after receiving information about the events, as they believed that the French had provoked the Russians and that the Tsar had peaceful intentions.The French cabinet also refused to send a fleet, unless the British sent one first, in fear of it being interpreted as an act of "Napoleonic aggression." Persigny, however, firmly believed that the British would join the French by their side if they were to send a fleet. After being convinced by Persigny's argument that the matter was not only about curbing Russian aggression but also restoring national honor, Napoleon decided to dispatch a fleet to Greek waters as a warning.Eager to restore France as a Mediterranean power, he believed that mobilizing a fleet would appeal to British Russophobes such as Urquhart and force Britain to join in tandem with France. The British were furious, however, and scolded the French for unnecessarily escalating the conflict. They waited for the ambassador to Constantinople, Stratford Canning, to return to Constantinople before mobilizing their fleet alongside the French fleet in the Aegean Sea.

Canning found the Turks eager to stand up to Menshikov and his strong-arm diplomacy, as well as fired up with a newfound sense of Russophobia, which he cunningly played into by urging them to stand firm against the Russians and refuse the sened. Canning believed that "it was vital for the Sultan to grant religious rights by direct sovereign authority rather than by any mechanism dictated by Russia. In Stratford's view, the Tsar's real intention was to use his protection of the Greek Church as a Trojan horse for the penetration and dismemberment of the Ottoman Empire (Figes, 2012,p. 113). The Turks, with the full support of the British, rejected Menshikov's demands, and the sened on May 15th, 1853. Menshikov brought news of his failure to the Tsar and announced that all communication with the Porte would be cut off. Nicholas, seeing that his diplomatic mission had failed, turned to military options. Field Marshal Paskevich, one of the Tsar's favorites, played to his pan-Slav fantasies

by urging him to occupy the Danubian Principalities and bank on the hope that the Slavs would rebel against their Ottoman oppressors and join the Russian forces, thus forcing the Sultan to agree to the Tsar's demands. Nicholas, spurred on by Paskevich, ordered his armies to occupy Moldavia and Wallachia. Copies of an imperial manifesto outlining a list of religious grievances by the Ottoman government were posted on doors in every town. It read: "We are ready to stop our troops if the Porte guarantees the inviolable rights of the Orthodox Church. But if it continues to resist, then, with God on our side, we shall advance and fight for our true faith." The Turks strengthened their forts along the Danube and prepared for an imminent Russian invasion, but the British were split on the occupation of the Principalities. On the one hand, the pacifist Aberdeen did not want Britain to be drawn into a large-scale conflict against Russia and was entirely opposed to the idea of sending a fleet to aid the Ottomans. On the other hand, Palmerston demanded immediate action by the British and wanted a fleet to be sent to the Bosporus so as to force the Russians to withdraw from the Principalities. The two sides reached a compromise by sending a fleet to Besika Bay, an inlet right outside the Dardanelles Strait, close enough to prevent a Russian attack on Constantinople, but far enough to not provoke the Russian fleet. In July, however, a sudden shift in the manner of the Russian occupation occurred. The Tsar had ordered the hospodars (governors of Wallachia and Moldavia under the Porte) to sever relations with the Porte and instead start paying tribute to Russia, signaling to the European powers that perhaps the Tsar was looking to permanently occupy the Principalities. In response, the Austrians mobilized roughly 25,000 troops and the French and British put their fleets on war footing. Canning strongly supported military intervention, arguing that the Ottomans, with the necessary support of the French and British, were more than capable of repelling the Russians. The Austrians could not tolerate the Russian occupation due to their heavy dependence on the Danube for foreign trade. As such, they, joined by the British, French, and Prussians proposed a diplomatic solution termed the Vienna Note, which vaguely stated that the Porte would agree to uphold Russia's treaty rights in the Holy Places and its protection of Orthodox Christians living in the Ottoman Empire. The Tsar saw it as a diplomatic victory and agreed to sign it as is and then back off. However, the Turks were not consulted in the drafting of the Note and were therefore concerned that it would give the Russians broad protection over Orthodox subjects and the ability to interfere in Ottoman affairs at any time. Not surprisingly, this is precisely how the Russians interpreted the Note. Abdulmecid wanted

the Russians to first leave the Principalities before diplomatic relations were to be re-established, considering that they were after all Ottoman vassal states, but the Tsar firmly refused. Thus, all parties involved abandoned the Note. The Tsar likely blamed Canning for the Porte's decision to refuse the Note, but as Figes writes, "the truth is that Stratford did his best to get the Porte to accept the Note, but his influence on the Turks was steadily declining in the summer months, as Constantinople was swept by demonstrations calling for a 'holy war' against Russia" (Figes, 2012, p. 126). The Ottoman public, spurred on by the invasion of the Principalities, was filled with nationalistic spirit and religious emotion. Large crowds formed in Constantinople for pro-war demonstrations, and many Muslim scholars called on the Porte to launch a holy war against Russia. The pro-war sentiment was so strong that the Porte feared the potential for an Islamic revolution if it did not declare war. Abdulmecid, forced with the prospect of having to abdicate at the hands of an Islamic revolution, conversed with his ministers and agreed to declare war against Russia. "Better to die fighting," declared Ottoman general Reshid Pasha, "than to not fight at all. God willing, we will be victorious" (Türkgeldi, 1987, p. 319).

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Is Social Media Scientifically Impacting the Brain of Users

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Abstract

In recent years, social media has gained immense popularity among younger generations due to its ability to facilitate social interactions. However, the use of social media has been found to have negative effects on the brain, primarily through the release of dopamine, commonly referred to as the "feel-good" chemical. Dopamine is a neurotransmitter that plays a crucial role in sending signals to nerve cells and influencing the experience of pleasure. When individuals engage with social media, it activates the brain's dopamine reward pathway, creating a loop that reinforces the desire for more engagement. This chemical alteration of the brain can lead to changes in the dopamine threshold, resulting in overuse or addiction to social media. This article aims to explore the impact of social media on the brains of countless users, particularly the excessive release of dopamine. Firstly, we will examine how social media triggers an addictive response in the brain by stimulating the reward system and perpetuating the dopamine loop, often without the users' conscious awareness. Secondly, we will delve into the ways in which social media affects mental health, including the replacement of genuine happiness and its impact on concentration and focus. Lastly, we will discuss strategies to mitigate the harmful effects of social media and propose preventive measures.

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1 Science behind the addiction to social media

Similar to alcohol and drugs, social media has a detrimental impact on the brain. When users engage with social media platforms, it triggers the release of dopamine, which follows the brain's reward pathways. This dopamine release induces feelings of pleasure and satisfaction. However, users often unknowingly enter a cycle where the brain adjusts its dopamine threshold to maintain the same level of enjoyment as before. This phenomenon, known as the social media "dopamine cycle," occurs when the brain associates the use of technology with pleasurable experiences and craves it during times of discomfort. As users increase their social media usage, the brain's reward threshold also increases, leading to a greater need for more social media stimulation to achieve the same level of pleasure that was previously attained with less exposure. This escalating cycle perpetuates a craving for social media and contributes to addictive behaviors. Following the use of social media, the brain undergoes a compensatory mechanism in which it reduces dopamine levels below the initial baseline. This phenomenon gives rise to what is known as the "Dopamine Loop." Users experience a sense of dopamine depletion, prompting them to seek further stimulation on social media in order to elevate dopamine levels and regain satisfaction. Unfortunately, these efforts prove to be inefficient, as each subsequent interaction with social media results in even lower dopamine levels than before. Consequently, users inadvertently establish a recurring dopamine cycle that gradually alters the dopamine threshold, ultimately leading to addiction.

2 Impacts of Social Media in Mental Health

Social media has deteriorated mental health among teens. Prior to using social media, users are in a state of homeostasis. However, the release of high doses of dopamine during social media interactions disrupts this balance, causing the brain to compensate by pushing dopamine levels below the baseline. This creates a state of "dopamine deficit" where users experience a sense of unhappiness as dopamine falls below its normal levels. This deficit state can manifest as anxiety or depression and serves as a foundation for various mental health disorders.During this phase, individuals attempt to restore dopamine levels, often by increasing their time spent on social media. Unfortunately,

this perpetuates a cycle where users become reliant on social media to alleviate the dopamine deficit and seek temporary relief from their negative emotional state. Consequently, the excessive use of social media further exacerbates mental health issues among teenagers. The excessive use of social media can create an illusion of happiness, but it fails to replicate the authentic experience of true happiness. The release of substantial amounts of dopamine during social media interactions can mimic the sensation of happiness. However, due to the dopamine loop, users often find themselves feeling even worse after using social media as their dopamine levels dip below the baseline. This negative impact is reflected in the mental health of modern-day teenagers, with studies showing that those who spend more than two hours on screens are more likely to rate their mental well-being as poor or bad (McNamara).

In contrast, genuine happiness can be understood through the Japanese concept of "Ikigai," which defines the value and purpose that each individual finds in life, a unique and personal experience for everyone. While social media may simulate happiness, it paradoxically has an adverse effect on the brain of users. It leaves individuals feeling dissatisfied and compelled to seek further dopamine stimulation to compensate for the dopamine loss, perpetuating a cycle of fleeting "happiness" and intensified episodes of "unhappiness." Moreover, social media has the tendency to replace genuine happiness, or Ikigai, thereby contributing to poor mental health outcomes.

3   Effects of Social Media on Concentration

The use of social media has various impacts on the brain's ability to focus and concentrate. Firstly, the addictive nature of social media triggers brain activity through the stimulating effects of sounds and light. Teenagers often engage with their phones at night, leading to reduced sleep duration and even insomnia. The lack of adequate sleep diminishes focus and impairs nerve activity. Secondly, social media can unconsciously hinder concentration. A study involving children revealed that those who had their smartphones within sight, even if they were not actively using them, performed worse on cognitive tests compared to those who kept their phones out of reach in another room (Ehmke). This study demonstrates the detrimental effects of smartphones on the brains of students,

as the constant presence of the device unconsciously affects focus by keeping the brain in a state of continuous alertness to potential stimuli, such as notifications. Moreover, many students believe they can effectively "multitask" by engaging in multiple activities simultaneously, such as watching videos while doing homework. However, research has consistently shown that true multitasking is not possible, as the brain continuously shifts focus between the various tasks, preventing full concentration on any one activity.

4 How the Impact and risks of Social Media can be Reduced

The younger generations face a growing risk of diminishing intellectual capacity due to the detrimental effects of social media and technological devices on concentration, as well as the associated mental health concerns. To address this issue, experts strongly advise implementing several strategies. First and foremost, it is recommended to limit daily screen time to less than two hours in order to mitigate the negative impact on cognitive abilities. Additionally, when striving to concentrate on tasks, keeping the device out of reach can significantly enhance focus by minimizing distractions. Another effective approach is to disable all notifications, as this helps prevent the brain from constantly anticipating dopamine stimuli. Furthermore, experts suggest periodically disconnecting from smartphones and other devices to foster connections with the non-technological world. Taking breaks from technology allows individuals to engage in activities that promote intellectual growth and well-being, such as reading, pursuing hobbies, or spending quality time with loved ones.

5 Conclusion

The impact of social media on mental health and concentration is evident through its influence on dopamine release and the brain's reward pathways. Social media creates a loop that compensates for the surge of dopamine by reducing the threshold below the original levels, leading to feelings of sadness.

This dopamine loop can significantly impact mental health, as the resulting "dopamine deficit" can resemble symptoms of anxiety and depression. Concentration is also affected by social media, both consciously and unconsciously. The constant exposure to social media platforms and the allure of notifications can disrupt focus and hinder one's ability to concentrate on tasks. To mitigate these effects, experts recommend unplugging from technological devices periodically. By intentionally disconnecting, individuals can prevent the formation of a generation that is negatively impacted by the mental health concerns associated with excessive social media use, as well as combat decreased intellectual ability and concentration.

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Understanding The Psychology of Suicide and Suicidal Behavior

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Abstract

Suicide has emerged as a pressing global concern over the past years, and it is expected to remain so in the foreseeable future. This paper aims to provide deeper insights into the psychology of suicide and the influence of external factors on suicidal tendencies. By specifically examining the impact of isolationism and feelings of burdensomeness, this study delves into significant factors affecting suicidality, identifies high-risk individuals, explores genetic predisposition, recognizes major warning signs, and emphasizes the importance of prevention.

Extensive research has demonstrated that a combination of internal and external factors, including genetics and situational depression, contribute to self-harm and suicide. However, it is crucial to comprehend the extent to which certain circumstances and emotions contribute to the desire to commit suicide. By drawing on Thomas Joiner's book "Why People Die by Suicide" and numerous other reputable sources, this study concludes that two primary external factors strongly associated with suicidality are feelings of isolation and burdensomeness. Furthermore, it reveals that both religious beliefs and age play significant roles in determining an individual's vulnerability to suicide.

1   Major Factors of Suicide

Suicide is often seen as a means to end suffering or a way to get rid of or avoid pain, and it carries a universal stigma. Society often perceives it as a cowardly and weak act. No one commits suicide for no reason. As David Hume once

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expressed, "No man ever threw away life while it was worth keeping." What factors contributes to suicide? What makes people feel that life is not worth keeping? Whether rooted in feelings of isolation or burdensomeness, various reasons can contribute to a person's sense of despair, including past experiences, genetic predispositions, and more. But what drives individuals to end their lives, even when faced with challenges that may appear temporary?

Two major factors, according to Thomas Joiner, of suicide include 'perceived burdensomeness' and 'failed belongingness' (Joiner). Perceived burdensomeness alludes to the feelings of inadequacy or inefficiency a person experiences. These factors are particularly prevalent among individuals with disabilities or those who feel that they only impose hardships on the people around them. Failed belongingness, however, relates to the feelings of isolation one feels in others' company. 'Failed belongingness' contributes to the observation that suicide rates go down in times of celebration (when people come together) and in times of tragedy (when people support one another) (Joiner, Hollar, Van Orden, 2006).Social alienation has emerged as a prominent factor associated with suicidality, along with perceived burdensomeness. These two factors are commonly found among individuals at risk of suicide. Those who experience feelings of burdensomeness or ostracization are more susceptible to suicidal ideation and actions compared to those who do not suffer from these emotional states.

Previous suicide attempts and self-harm are two other major factors that contribute to the likelyhood of suicide. In "Why People Commit Suicide" by Thomas Joiner, Joiner explains that " ... the first step to death by suicide is to grapple with the results of eons of evolution, to grapple with one of nature's strongest forces—self-preservation" (Joiner, 48). The act of committing suicide is far from simplistic. It rarely occurs impulsively, as it entails overcoming the strong instinct for self-preservation. Generally, individuals who are at the highest risk of suicide are those who have made previous attempts."The view taken here is that those who have gotten used to the negative aspects of suicide, and, additionally, who have acquired competence and even courage specifically regarding suicide, are the ones capable of the act—anyone else is unable to complete suicide, even if they want to" (Joiner, 49). A critical element in the act of suicide is the development of habituation to pain. Individuals who have engaged in self-harming behaviors, like self-cutting, are at a higher risk of both attempting and completing suicide. This is because they may perceive the act of self-harm, such as cutting their wrists or causing harm to themselves, as less painful over time. Moreover, the severity or lethality of the self-harm attempt

is directly correlated with an increased likelihood of a completed suicide.. As Schneidman puts it, "Each day contains the threat of failure and assaults by others, but it is the threat of self-destruction that we are most afraid to touch" (Edward Schneidman). If suicide came without pain, almost all of humanity would have committed it by now.

Substance abuse also plays a major role in suicidal behavior. "Opioid use is associated with a 40-60 percent increased likelihood of suicidal thought, and a 75 percent increased likelihood of suicide attempt. Some studies suggest that Opioid and injection drug users are 13 times as likely to die by suicide" (Addiction Center). In the end, individuals struggling with substance abuse disorders are at a higher risk of suicide compared to those without such issues. One possible explanation for this is that substance abuse can contribute to intensified and distressing experiences, including self-harm (Joiner, 195). In addition to this, such disorders can lead to an increase in social alienation and diminish one's sense of efficacy, thereby amplifying feelings of failed belongingness and perceived burdensomeness, as mentioned earlier. A study relevant to this, has also shown that when intoxicated individuals are more inclined to self-inflict pain compared to those who are sober (Joiner, 194).

Mental disorders play a significant role in influencing suicidality among individuals. Two major disorders include Borderline Personality Disorder and Anorexia Nervosa. "Borderline Personality Disorder is characterized by a long-standing pattern of stormy interpersonal relationships, self-destructive behavior such as self-cutting or burning, marked emotional lability and impulsivity, and an empty or diffuse sense of identity" (Joiner, 195). Borderline Personality Disorder patients generally have pervasive thoughts of a lack of self-efficacy and self-doubt. This reinforces feelings of burdensomeness and can increase the chances of suicide. At least fifty percent of people with borderline personality disorder have made at least one very severe suicide attempt (Joiner, 196). Individuals with Borderline Personality Disorder often have a background of self-harm, intensifying their vulnerability to suicide risk. Additionally, Anorexia Nervosa, another mental illness, can exert a substantial influence on suicidality. Women with anorexia often subject themselves to physical trauma, primarily through self-starvation, and frequently exhibit increased tolerance to pain. This contributes to the development of a capacity for engaging in potentially lethal self-injury.

Mood disorders play a significant role in influencing suicidality. A considerable number of suicide cases involve individuals with a history of mood disorders,

such as depression, bipolar I disorder, and bipolar II depressive disorder. According to a study done by the Addiction Center, "66 percent of people who fall victim to suicide are dealing with depression at the time" (Addiction Center). Mood disorders' correlation to suicidality may be due to an increased ability to cause self-harm as a result of manic episodes. Depression, specifically, causes feelings of sadness, hopelessness, and loss of interest in specific activities. This can result in social isolation, which in turn can cause an increase in suicidal thoughts or behaviors.

2   Major People At Risk

When considering gender, men are approximately four times more likely to die by suicide compared to women. Conversely, women are about three times more likely than men to make suicide attempts (Joiner, 155). This gender discrepancy in suicide rates may be attributed to a higher tendency towards violence among men, which is comparatively less prevalent among women. For instance, men are more likely to die by gunshot, whereas women tend to resort to methods such as overdose or poisoning when attempting suicide. Additionally, men may possess a greater capacity for self-harm due to their engagement in more aggressive activities or sports. Moreover, men might experience greater challenges in establishing a sense of belonging, as women are generally less inclined to abandon relational values that form a significant part of their identity.(Joiner, 156). The graph below shows the average suicide rates of men and women in the US from 1981-2016.

In the United States, there is a notable contrast in suicide rates between African-Americans and Caucasians, with African-Americans generally exhibiting a lower risk. This discrepancy is believed by some theorists to be influenced by factors such as social support and religiosity, which tend to be more prevalent among African-Americans (Joiner,158). When it comes to religiosity and a sense of connection with God, African-Americans often surpass Caucasians in their levels of devotion and spiritual closeness. "In a national survey, it was found that African-Americans are more likely to attend church, pray, and feel more strongly about their religious beliefs than whites." (Joiner, 159).In this context, it suggests that religious institutions and support from others can serve as a protective factor against suicidality. This reinforces the theory that when the fundamental need for belongingness is fulfilled, the risk of suicide decreases.
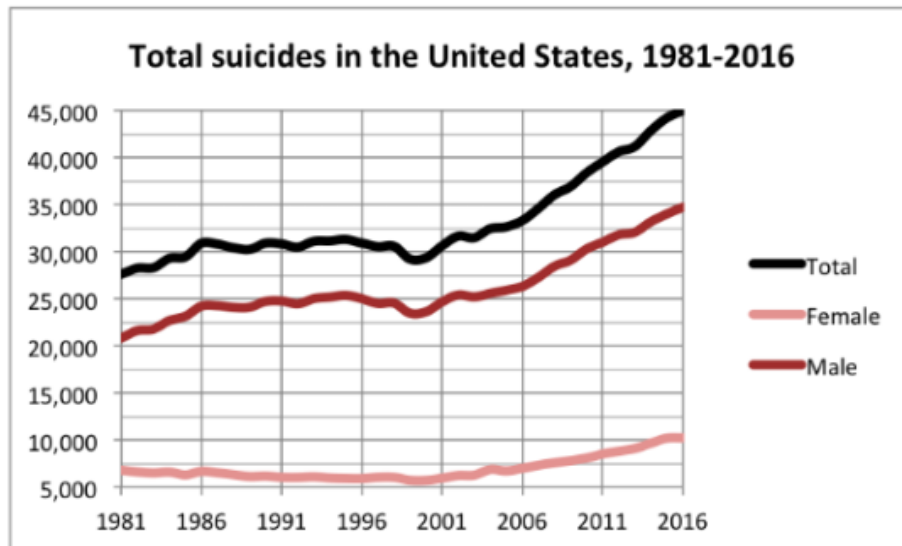
Figure 1:

Hispanics have one of the lowest suicide rates among all races/ethnicities in the United States (sprc.org). This may be due to close contact with family. Nevertheless, it is important to acknowledge that there is considerable diversity within the Hispanic population in the United States. Conversely, Native Americans experience higher rates of suicide compared to other populations, with rates approximately 1.5 to 2 times higher (Joiner, 160). This may be due to the social disintegration of the Native Americans, but may also be affected by the social cohesion in different tribes (Joiner, 161). On the opposite end of the spectrum,various ethnic groups and cultures may exhibit lower susceptibility to suicide. This can be attributed to their strong sense of community, which fosters a reduced emphasis on autonomy and an enhanced sense of belongingness. In contrast, cultures that prioritize independence and autonomy may experience heightened feelings of suicidality due to a perceived lack of belongingness.

Age is a significant factor in suicidality, as the risk generally increases with advancing age. "In the United States, suicide is most common in those who are sixty-five years old or older . . . The ratio of attempted to completed suicides among adolescents is quite high (more than a hundred to one), whereas the ratio is around four to one among older people)" (Joiner, 162). While feelings of burdensomeness may appear more prevalent among older individuals, it is important to note that individuals of any age can experience such feelings,

contributing to a high rate of suicide among adolescents and young adults, alongside depression. In fact, depression is more commonly observed in young people compared to older individuals. It is crucial to recognize that feelings of burdensomeness are not solely linked to being a failed breadwinner but can also arise from a sense of expendability (Joiner,163). Suicide, however, is not very common among younger children because they do not have the experience nor the time to acquire the ability to commit self-harm. The graph below shows the Suicide rates by age in 2015.
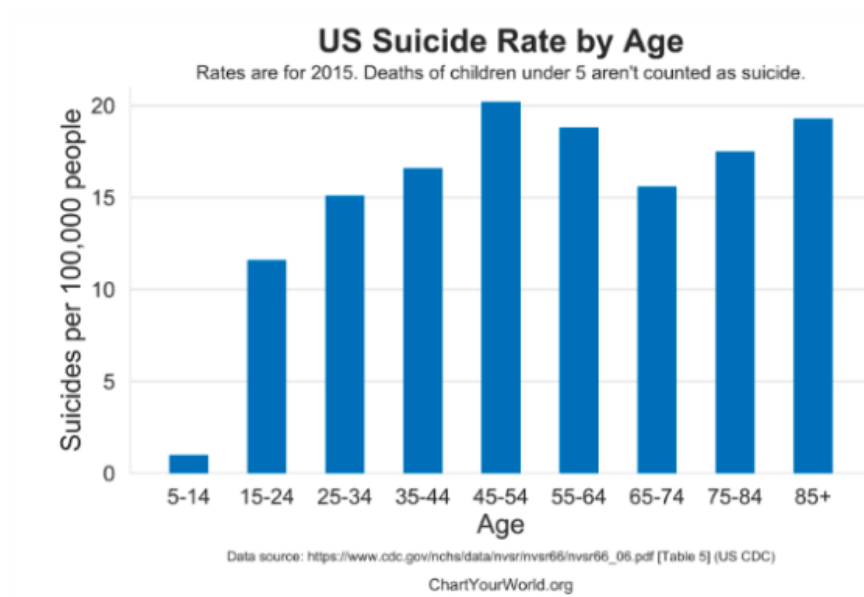
Figure 2:

Victims of childhood abuse are also at risk of suicide. Childhood abuse and neglect can result in feelings of expendability, which in turn causes increased suicidality. Childhood losses have a significant impact on suicide risk. Neglectful parenting, in particular, emerges as a major risk factor for suicidal ideation and subsequent attempts among adolescents. A study of 776 randomly selected children from a mean age of five to adulthood over a seventeen-year period showed that childhood abuse (especially sexual abuse) conferred a significant risk for suicidality (Joiner, 190). Results showed that the "Risk of multiple suicide attempts was eight times greater among those with a sexual

abuse history than among others" (Joiner, 190). Furthermore, childhood abuse amplifies habituation to pain, thereby enhancing the capacity for self-harm. Essentially, childhood abuse exerts not only physical but also psychological effects on individuals, significantly contributing to suicidality and placing victims at an increased risk of suicide.

3   Genetics

While research shows that there is a genetic component to suicide, it can not be entirely relied on without taking into account other factors. Genetic research, encompassing studies on twins and adoption registries, provides evidence supporting the influence of genetics on suicidality. For example "From a register of thousands of adoptions, they identified fifty-seven who eventually died by suicide. These fifty-seven were compared to fifty-seven matched adoption controls who had not died by suicide, specifically with regard to family history of suicide among their biological relatives. Over 4 percent of the biological relatives of the suicide group had themselves died by suicide, as compared to well under 1 percent of the biological relatives of the control group." These findings indicate that genes can contribute to suicidality. Furthermore, numerous mental disorders such as depression, mood disorders, and personality disorders, which possess a genetic component, significantly elevate the risk of suicide. Specific genes have been found to have associations with suicidality in certain studies. Genes such as the serotonin transporter gene, the TPH gene, and the COMT gene have demonstrated links to suicidality in various research findings (Joiner,179). Serotonin is responsible for the feeling of well-being and happiness people feel, in addition to facilitating sleeping, eating, and digestion. The serotonin system plays a crucial role in regulating serotonin levels in the synaptic space. Certain individuals with specific genotypes may exhibit dysregulated serotonin systems, which can have implications for their overall health and well-being. Studies have indicated that this particular genotype is more prevalent among individuals who have died by suicide compared to others. Additionally, people with a family history of suicide are more likely to have this genotype than those without such a family history (Joiner, 177). Tryptophan Hydroxylase or TPH is also a serotonin-system gene that can affect suicidality. Catechol-O-methyltransferase (COMT) is not a serotonin-system gene but has been linked to suicide in some studies. One study found that there was no difference in COMT genotype be-

tween patients at high risk for suicide and control patients, however, another study suggested that differences in the COMT gene are only found in violent suicide (Joiner,178).

4   Major Signs

It can be challenging to determine whether an individual is experiencing suicidal thoughts or not, particularly if one is not well-versed in recognizing the multitude of signs of suicide. While some signs may seem evident, there are also many that remain obscure and require deeper understanding to identify. A few common signs include being sad or moody, sudden calmness, changes in personality, difference in appearance, going through serious trauma, or change in sleep pattern. In addition to the aforementioned signs, there are several other indicators that can assist in recognizing if a person is struggling with thoughts of suicide or self-harm. These include experiencing overwhelming emotional or physical pain, withdrawing from family and friends, giving away cherished or meaningful possessions, expressing farewells to loved ones, attending to personal affairs such as making a will, or engaging in unnecessary risks that could potentially lead to fatal outcomes. When engaging in conversation with an individual who may be experiencing suicidal thoughts, certain prominent signs may manifest. These signs can encompass talking about wanting to die or end their life, expressing feelings of emptiness, hopelessness, or a lack of purpose in life, discussing a sense of being trapped or perceiving no viable solutions to life's challenges, as well as expressing a belief of being a burden to others or contemplating the idea of burdening others. Every emotion and experience we go through as humans is meaningful, regardless of its scale. If anyone is experiencing any of these symptoms, no matter how minor they may seem, seeking help is the best course of action to prevent further escalation. If someone observes these signs in someone close to them, it is important to seek help on their behalf. Additionally, alongside the aforementioned signs, there are several others that may concentrate on specific aspects of an individual's life. For instance, certain reasons or signs may be associated with relationships, such as experiencing physical or emotional abuse within a relationship, lacking support from family and friends, or having a family history of suicide. Other specific symptoms pertain to community, cultural, and societal factors. These signs encompass feeling ashamed to seek help, particularly for mental health concerns,

lacking access to adequate healthcare, specifically mental health or substance abuse care, and adhering to strong cultural beliefs that consider suicide as a viable solution for resolving problems.

5　Prevention

Suicidal thoughts are one of the most common and serious issues among adolescents and teens today. While it is common for everyone to experience moments of despair and sadness, when these feelings escalate to a point where one perceives themselves as worthless and entertains thoughts of being better off dead, seeking help becomes an imperative priority. One primary approach to prevention is Cognitive Behavioral Therapy (CBT), a form of psychotherapy that assists individuals in identifying and modifying their thought patterns in order to effectively cope with stressful experiences. By helping individuals develop alternative actions and thoughts instead of contemplating suicide, CBT serves as a valuable method for preventing suicide. Another type of therapy is Dialectical Behavior Therapy (DBT). This is another type of psychotherapy.Extensive research has demonstrated the efficacy of Cognitive Behavioral Therapy (CBT) in reducing suicidal behavior among adolescents. Furthermore, Dialectical Behavior Therapy (DBT) has shown significant success in significantly reducing suicide attempts among adults diagnosed with personality disorders (a mental illness with an ongoing pattern of impulsive behavior, self-image, and actions that result in impulsive behavior and problems with relationships). A therapist who is proficient in Dialectical Behavior Therapy (DBT) can assist individuals in identifying and addressing their disruptive or unhealthy emotions and behaviors. By acquiring effective coping strategies for challenging situations, individuals can find support in managing distressing circumstances. Seeking help remains the optimal approach for preventing or halting the occurrence of suicide, both in oneself and in loved ones. The Suicide Hotline number is 800-273-8255, https://suicidepreventionlifeline.org/?scrlybrkr=50efaab0.

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How Player Winning Rates and Average Cards to Bust are Affected by Incremented Decks in Blackjack

Kevin Yuan, Karina Shah*

Abstract

In this research paper, we investigated the impact of adding increments from 0 to 20 with a step of 0.01 to each card in a deck of Blackjack (e.g. an increment of 0.01 would add 0.01 to every card in the deck). Our focus was on how this affected the average number of cards it took for a player to bust and their win rate. Blackjack, a popular card game played in casinos for centuries, requires players to get as close as possible to 21 without going over to beat the dealer.Typically, games will have 2 to 7 players, but in this paper, the simulation analyzed a singular player versus the house. Though Blackjack includes intricacies regarding splitting hands and strategies with money, these rules will be looked over for the sake of complexity. By conducting thousands of simulations for each increment, we analyzed patterns between the increment value and the two variables of interest. Our results indicated that the player's winning percentage was highest when an increment between 9 and 11 was added, with a mid-60 percentile chance of winning. Additionally, the average number of cards required to bust approached 3.

1   Introduction

Blackjack is a highly popular card game frequently played in casinos. Its origins are subject to various theories, but the most widely accepted one is that the game first emerged in French casinos during the 1700s under the name Vingt-et-Un, which means 21 in French (Wintle, February 11, 2010). Spain also had

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a similar version of the game in which players aimed to reach 31 with at least three cards, while the Romans are believed to have played a variation involving wooden blocks with varying numerical values (Wintle, February 11, 2010).

2   Background

2.1   Rules

In typical casinos, multiple decks of cards are shuffled together, with the six-deck game being the most popular. In Blackjack, the ace card can be counted as either 1 or 11, and it's up to the player to decide which value will allow them to reach a sum closest to 21 without going over. The face cards, including jack, queen, and king, are worth 10 points each, while the numerical cards hold their face value.

2.2   Gameplay

In Blackjack, the dealer initially deals two cards face up to the player and one card face up and another face down for themselves.The player can then choose to hit, meaning they'll receive another card in an attempt to get as close to 21 without exceeding it. Once the player decides to stand, meaning they're satisfied with their current hand, the dealer flips over their face down card and hits until they reach a sum of at least 17, the standard rule used by most casinos. If the player's card sum is less than or equal to 21 and higher than the dealer's, the player wins. If the player goes over 21, they bust, resulting in an automatic loss. In the event that both the player and the dealer have the same card sum, the game results in a tie.

2.3   Optimal Strategy

The optimal strategy for playing Blackjack varies depending on the number of decks in use. However, this study focuses on a single-deck game. In this case, the player's optimal strategy involves standing if the sum of their cards ranges from 17 to 21. If the sum of their cards ranges from 13 to 16 and the dealer's face-up card is 2 to 6, or if the sum of their cards is 12 and the dealer's face-up card ranges from 4 to 6, the player should also stand. Otherwise, the player should hit, requesting another card until they fall into one of the standing ranges. The

house's strategy, on the other hand, is to always hit until their sum is at least 17.

3   Literature review

There is minimal past research conducted on using different decks when playing Blackjack. However, current games can be played with one or multiple decks, changing up the strategy a player uses (Betway). The number of decks drastically changes the chances of obtaining certain hands, like Blackjack 4.83 percent for one deck to 4.78 percent for 2 decks (review fix). Studies have been conducted regarding winning chances and the house's edge (winning percentage over the player) in relation to the number of decks used. A study by the Wizard of Odds demonstrated that as the number of decks in the game increases, so do the player's winning chances, as the houses' edge decreased by 0.079 percent when the decks increased from 1 to 8 (wizard of odds). The author postulated this was because the bust rate decreased as the number of decks increased, thus increasing the chances that the player would obtain a hand better than the house's.

From searching numerous research journals, there does not seem to have been past research regarding how winning chances change when the whole deck of cards is shifted upwards. However, given the number of decks in play affects the winning chances as the bust rate changes, it can be postulated that the winning chances would also change as the decks are shifted upwards. This is because it will become easier to bust with larger card numbers. We will also measure the average number of cards it takes to bust to see if there is a correlation between the bust rate and winning rate that was true for changing the number of decks within play study.

4   Methods

As with any analysis regarding patterns in card games, it is optimal to create a simulation through code that can be automatically run many times such that it limits manual intervention. For example, instead of having to manually play through 1000 games and record the results, programming a bot to run through one game and then looping that code 1000 times would be much faster.

Before coding, some parameters and a basis was set. Since we are focusing on

win rates and the average number of cards it takes to "bust", the money aspect of the game was not principal. Thus, it was acceptable to negate coding any features regarding money in Black Jack (e.g. doubling down). A strategy such as counting cards based on the running count was also not included. Moreover, splitting hands, the term given for playing two hands at once when pairs of the same card are dealt, was also looked over to limit complexity. Though splitting hands plays a vital position in the player's monetary gain over the house, it does not drastically change the winning chances shown later in the results section. Finally, it is also crucial that a set strategy was given to both the player and the house since consistent gameplay was needed if generated data were to be interpretable. Based on the number of decks in play at one time, the player can use the different optimal strategies. The notable two being for one deck and another for 6-8 decks in play. In this study, we chose to have one deck at play though the same program implemented later can be easily altered to fit the 6-8 deck strategy. The optimal strategy for the player with one deck in play is listed below:

Figure 1: The figure above shows the optimal strategy along with the key for the player with one deck in play. Note that as established earlier, in this study we only consider two of the players moves: being able to hit and stand. Thus, the Rh, which normally stands for surrender, was treated as a stand and doubling down was treated as a hit or a stand.

The house's strategy, by conventional rule, is to hit when the sum of their cards is below 17. It is crucial to consider the situation when either the player or the house has busted but has an ace in their deck. By the Blackjack rule, the ace can hold a value of 1 or 11 based on the holder's choice. Aces are initiated to hold a value of 11. However, if either player or house busted but had an ace in their deck, the ace would then be converted to a value of 1 and the player would resume asking for cards.

Given the parameters we have defined, a bot was coded, of which we will explain the significant functions.

We started by defining lists and variables:

```
5   numberList = [2, 2, 2, 2, 3, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7, 7, 8, 8, 8, 8, 9, 9, 9, 9, 10, 10,
    10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 11, 11, 11, 11]
6
7   ##Variables
8   playerCards = []
9   houseCards = []
10  winPlayer = 0
11  winHouse = 0
12  Ties = 0
13  bustSum = 0
14  bustNum = 0
15  x = []
16  y = []
```

Figure 2: The segment above displays the lists and variables created. The playerCards and houseCards lists represents the player and house's current hand, winPlayer and winHouse, and Ties count the number of times either entity has won or tied, bustSum and bustNum sum the number of cards in the hand every time the player busts and the number of times a player busted respectively. The x and y lists are defined later when plotting the distributions. Finally, the numberList represents the initial deck of cards. When later intervals are added this list would subsequently be altered.

The first function defined was the draw function. Generating a random number from index 0 to the length from the numberList, the function would return a randomized card. This simulated a shuffled deck. The index of the randomized card would then be removed.

The next function defined was called "checkEmpty". This function was crucial as it ensured that at all times one deck (or what was remaining after players drew) was being played, guaranteeing that the optimal strategy aforementioned was implemented. After each draw, the draw function was called; this function would be called to check whether or not the last draw was the last card that had not been played yet. If it was, the function would reset the deck by adding

```
40 ▼ def draw():
41      n = 0
42 ▼    if len(numberList) > 0:
43          index = random.randint(0, len(numberList)-1)
44          n = numberList[index]
45          numberList.pop(index)
46      return n
```

Figure 3: The code segment above is the draw function.

back the original cards (a regular deck of cards whose values were defined in the introduction) and adding the current increment. For example, if the current increment was 0.25, 0.25 would be added to each deck.

```
29 ▼ def checkEmpty(num):
30 ▼    if len(numberList) == 0:
31 ▼        for i in range (2, 10):
32 ▼            for j in range (1, 5):
33                  numberList.append(i+(num/10))
34 ▼            for k in range (1, 17):
35                  numberList.append(10+(num/10))
36 ▼            for j in range (1, 5):
37                  numberList.append(11+(num/10))
```

Figure 4: The code segment above is the checkEmpty function. Note that the function takes in a "num", which simply signifies the current interval that is being used within the deck of cards. Thus, within each append function, "num" is added.

The strategy functions were the next to be created, essentially following the previously defined strategies for both the player and the house.

Finally, the win and reset functions were created to determine who (player or house) won each round, and to reset the lists that acted as the player's and house's hands. The win function simply checked whether or not an entity had busted. If neither the player or house had, it checked who had a closer sum to 21. The reset function cleared the player and house cards lists.

```
77 ▼ def win(a, b):
78      numA = sum(a[0: len(a)])
79      numB = sum(b[0: len(b)])
80 ▼    if ((numA) > 21):
81          global bustSum
82          global bustNum
83          bustSum = bustSum + len(playerCards)/2
84          bustNum = bustNum + 0.5
85          return "House"
86 ▼    elif ((numB) > 21):
87          return "Player"
88 ▼    elif (numA > numB):
89          return "Player"
90 ▼    elif (numB > numA):
91          return "House"
92 ▼    else:
93          return "tie"
```

Figure 5: The code segment returns who won by first checking whether either entity has busted. If not, it compares who has the higher total value. If both entities have the same total value, it returns a tie.

With the basic functions defined, the run function was created to combine all of the functions to simulate one round of black-jack between a single player and the house. After each round, variables would be added to keep track of the player wins, house wins, ties, cards needed to bust if the player did bust, and added onto the number of busts if the player did bust.

```
29 ▼ def checkEmpty(num):
30 ▼    if len(numberList) == 0:
31 ▼        for i in range (2, 10):
32 ▼            for j in range (1, 5):
33                  numberList.append(i+(num/10))
34 ▼        for k in range (1, 17):
35              numberList.append(10+(num/10))
36 ▼        for j in range (1, 5):
37              numberList.append(11+(num/10))
```

Figure 6: The code segment above is the function that runs one round of a game.

Finally, now that we were able to run one round of a game, we could loop through runGame thousands of times to find the player's winning chance and the average number cards to bust (calculated by dividing bustSum/bustNum). Since this study aimed to determine the correlation between changing the deck by a certain interval and the winning and average number of cards it took to bust, the for loop that wrapped the runGame function was then wrapped by another function that added an interval from 0 to 20 in increments of 0.01. Two graphs were then generated with winning rate and bust rates being the two response variables and the added increment being the explanatory variable.
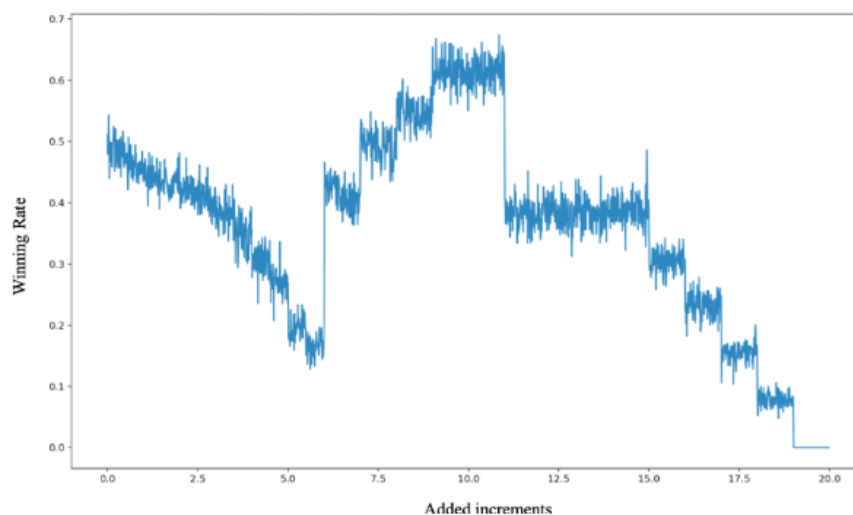
Figure 7:   The graph shows the correlation between the increment value of the cards and the player's winning rate.

5   Data

To analyze the win rate data visually, we utilized the Matplotlib library to plot the lists. Figure 1 displays the correlation between the increment value of cards and the player's winning rate, with the increment value ranging from 0 to 20. The graph exhibits four noteworthy behaviors. Firstly, in several segments, the graph behaves similarly to a step function, where the intervals are densely packed together with similar winning rates. For example, (provide an interval as an example).

When adding increments from 0 to 6, the graph displays a decreasing linear graph. To prove this pattern, we implemented the concept of regression.When adding increments from 0 to 6, the graph displays a decreasing linear graph. To prove this pattern, we implemented the concept of regression. We analyzed both power and exponential by logging the x and y values, but there was a weak correlation. The r^2 value was significantly lower showing that there was a weak correlation between the x and y variables. The r^2 value represents the percent of the variation in the winning rate which can be explainable by the approximate linear relationship with the increments in the card values. We then analyzed a linear regression model between winning rate and card increments and the residual plots showed a clearer scatter of points. There was a slight curve but
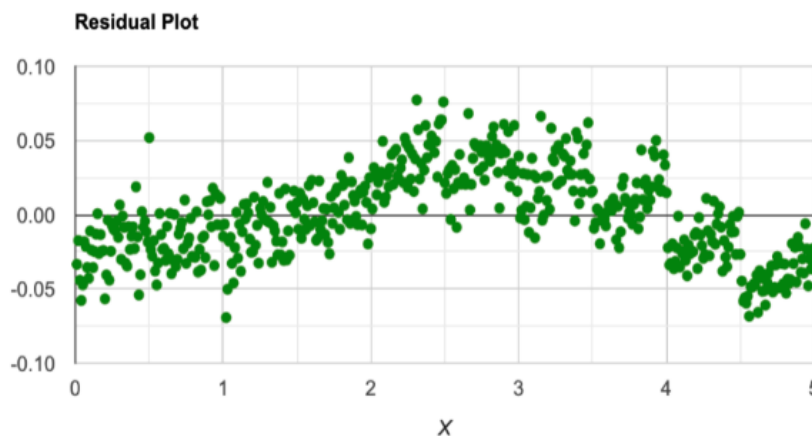
Residual Plot

Figure 8:   First Segment (0-6)

this model showed a more random pattern. The r^2 value was 0.89 representing the percent of the variation in the winning rate which can be explainable by the approximate linear relationship with the increments in the card values. The r value is 0.94 which shows a strong negative linear relationship between the winning rate and card increments. Therefore, this proved that this segment of the graph was a decreasing linear graph. As the card values increase in the standard deck, the player will have a higher chance of winning. As the card values are higher, the player will tend to bust more once hitting, thus decreasing their winning rate.

Second Segment (6-11) The graph exhibits a distinct pattern when adding increments of 6-11. During this segment, the graph shows a sharp increasing linear pattern. This is logical as adding these values will put the players in standing range. The optimal strategy is for players to stand when the sum of their cards is from 16-21, and adding these increments will tend to put the player in this range with the 2 cards they are dealt. Since the player is already in the standing range, they are less likely to bust and have a better hand than the house.

Third Segment (11-15) When adding increments from 11-15 to the standard deck, the graph displays a somewhat horizontal line at x = 0.4. This is because adding these increments puts the players at a sum where the player is supposed to stand. With a similar sum, the player will follow the same optimal strategy of what to do, leading the winning rate to be the same.

Fourth Segment (15-20) When adding increments from 15-20 to the standard deck, the graph displays a decreasing linear graph. This is logical since when the cards approach larger values, it will only take one more card for the sum of the players to exceed 21 (which will be shown in figure 2). Therefore, the winning rate will be much lower.
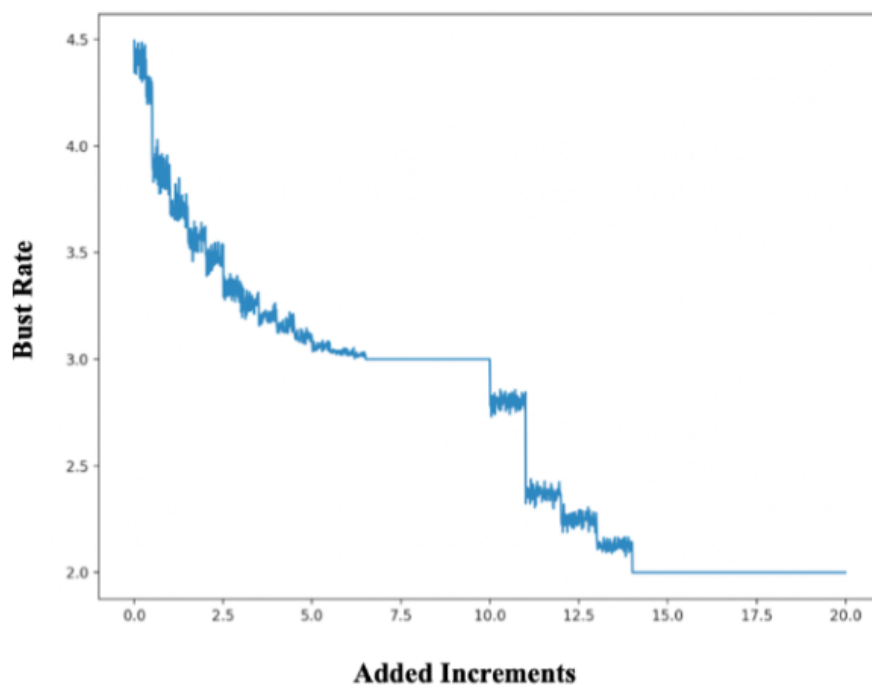

Figure 9: A similar method was utilized to generate the bust rate graph. Figure 2 illustrates the correlation between the increment value of the cards and the average number of cards it takes to bust. The increment value of cards ranges from 0 to 20.

Notably, it seems to be a decreasing power graph up to the increment of 10. It has an asymptote at y=3. This is logical since when the cards approach immensely large values, it only takes one more card for the sum of the players to exceed 21. This means that it will only take 2, the cards in the player's initial hand, plus one extra card for a total of 3 cards. Here is a second asymptote at x = 2. When the increments increase to such a large amount, the player's hand is considered an automatic bust. The graph also acts similarly to step function when the increments are positive. This means that within a set of intervals that

are densely packed together, they have similar bust rates.

6   Limitations and Future Studies

In typical games, blackjack consists of multiple players and multiple decks. Our simulated rounds of blackjack used a single deck of cards and excluded rules such as betting, splitting pairs, doubling-down, and counting cards. To expand our analysis of blackjack player strategy with different numbers of decks, we could include splits, which allow players to split two identical cards into two separate hands. This would increase the player's chances of winning. We could also add monetary rewards after each round and determine the best strategy to maximize earnings, benefiting those who play blackjack at casinos. Furthermore, we could include more decks, as blackjack is usually played with multiple decks, which could lead to a more effective blackjack strategy. Additionally, coded card counting could be incorporated, where the player keeps track of high and low-valued cards dealt to determine when to bet more or less and change playing decisions based on the deck composition.

Moreover, we can analyze the graphs using other methods. Currently, we used power, linear, and exponential regression to check the correlation between bust and win rate. We could also further analyze why the graphs give the current shape and form, as of right now we are analyzing the graphs based on our current knowledge.

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Circular Economy in Developing Countries: Chile and India Cases

Sofia Vishnyakova*

Abstract

Many people hold the notion that Earth is a dominant and powerful entity, equipped with infinite resources and the innate ability to heal itself. However, the reality is quite the opposite. Climate change, plastic pollution, and global warming are widely known issues, but have we truly made efforts to find effective solutions? It's not just about participating in protests, adopting an eco-friendly lifestyle, or reducing meat consumption to lower carbon emissions. Instead, what we need is the emergence of an advanced technological system on a global scale, coupled with a collective awareness from businesses, governments, and consumers.

In this article, I aim to delve into the concept of the circular economy (CE), exploring how different countries and companies have implemented it, how it can contribute to combating air pollution, and why it is crucial to reassess our familiar business patterns. There are Chile that stands for the developed country is compared with India that stands for developing country in this article based on the business concepts, political laws, and the social positioning.

1 What is a Circular Economy?

The term "circular economy" was first introduced in 1988 in the book "The Economics of Natural Resources." At its core, the concept of the circular economy revolves around creating an economic system that aims to achieve zero waste by promoting the sharing and recycling of existing materials and products for as long as possible. Since 2010, the idea of circular economy has gained significant

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traction, and it comes as no surprise. This model offers numerous benefits, such as minimizing emissions and the consumption of raw materials, creating new market opportunities, and enhancing overall resource efficiency.

The principles underlying the circular economy can be summarized into three key aspects: eliminating waste and pollution, promoting the circulation of products and materials, and actively regenerating the natural environment (1).

The traditional linear economy model, characterized by the collection of raw materials, their transformation into products, and their sale to consumers who eventually dispose of them as waste, is no longer viable without serious consideration for its ecological footprint. In contrast, the circular economy presents an alternative approach where everything operates within a closed loop. This shift towards a circular economy model leads to increased productivity, reduced resource consumption, and prolonged utilization of materials and infrastructure.

2   Circular Econoy in Developed Countries

Developed countries, due to their advanced industries, face a more pronounced global waste problem. The demands and values in these countries differ from those in developing nations. Developed countries generally possess greater purchasing power, robust infrastructure, engage in international collaborations, have well-established laws that prioritize citizens' welfare, and are better equipped to implement circular economy (CE) ideas efficiently.

Several factors contribute to the growth and development of the circular economy as an economic model. These include extending the product life cycle through the principles of Reduce, Reuse, and Recycle (3R), promoting ecological balance and protection, leveraging the flow of big data, implementing supportive government policies, and influencing consumer behavior (3).

Extending Product Life Cycle Using 3R

The primary objective of the 3R concept is to transition from a linear "create-use-discard" approach to a circular "create-use-reuse" model. To effectively extend the life cycle of products, companies adopt several components of the 3R policy. Firstly, the implementation of Product-as-a-Services and reduce consumption. By shifting from individual product ownership to providing products as services, companies can minimize waste generation. Secondly, sustainable

consumption practices play a vital role in the 3R approach. This involves actively avoiding waste and reducing overall consumption, promoting a more responsible and mindful use of resources. Lastly, the establishment of efficient material handling systems is crucial for closing the loop and creating a sustainable cycle.

Ecological Balance and Protection

"Nature is cyclical" –is the core concept of the circular economy (CE).In other words, it emphasizes the efficient utilization and reuse of resources. According to Denise Lu, our current consumption patterns would require 1.7 Earths to sustainably meet our needs (5). Developed countries, in particular, leave a substantial environmental footprint, surpassing the available resources for their populations, resulting in what is known as an ecological deficit. For example, the United States accounts for 13 percent of the world's total ecological footprint and holds the second largest deficit globally. Despite reducing its footprint by 18 percent since 2005, it still surpasses that of other developed nations by a significant margin (6). In order to achieve ecological balance, it is imperative for humanity to focus on several key concepts. These include energy and resource efficiency, which involves the systematic utilization of resources during the creation of a product to minimize wastage. Embracing renewable energy sources reduces. The global progress in adopting clean energy technologies such as solar, wind, and thermal power is evident. Effective waste management is another crucial aspect. Waste can manifest in various forms, including solid, liquid, or gas. To address this, it is essential to implement local infrastructure networks and waste to energy (WTE) methodologies that efficiently handle and process waste in an environmentally sustainable manner.

Big Data and Information Flow

Big data refers to the massive, dynamic, and continuous datasets that are often challenging to explore and evaluate because of their complexity (7). Big Data has been identified through the 7Vs framework (8), which includes volume (representing the large amount of data), velocity (referring to the high speed at which data is generated), variety (encompassing data in various forms such as text, numeric, and videos), veracity (highlighting the inherent uncertainty associated with data sources), volatility (indicating the storage capacity required), and value (emphasizing the primary objective). Through this data analysis,

companies can uncover hidden patterns and unlock the potential of circularity. Leveraging big data can support decision-making at each stage of the product life cycle and enable interventions in the development of more renewing and regenerative business models.

Cloud computing, Internet of Things, and Artificial Intelligence (AI) are pivotal components of the developed circular economy that have fueled the growth of Big Data and analytics.Cloud computing technology provides the capability to handle complex calculations required for data analysis. The Internet of Things enables the capture of valuable data that is essential for analysis and insights. Artificial Intelligence plays a significant role in predicting patterns of resource usage and evaluating waste production. AI is increasingly becoming central to accelerating and facilitating the adoption of circular economy practices.

Government Policies

Policies play a crucial role in influencing the adoption of sustainable methodologies. Strong regulations can provide clear guidance and direction for development and promote sustainability. They have the power to shape how supply chains, businesses, and energy efficiency practices operate. Effective policies create an ecosystem on a large scale, something that neither companies nor consumers can achieve individually

Consumer Behavior

Consumer behavior plays a pivotal role in shaping the adoption of sustainable practices and has significant psychological implications. It has the power to influence regulatory decisions by authorities, drive movements, and create shifts in the marketplace. Consumer behavior varies across different factors such as ethnicity, society, education, and social class. Achieving a shift in consumer behavior requires targeted efforts in promotion, education, and influencing public opinion.

3   Chile's Circular Economy Roadmap

I decided to pick Chile as an example for a developed country that is actively working towards implementing a circular economy.Firstly, Chile is in the early stages of integrating circular economy principles into its political and economic models, positioning itself as the first South American country to embrace this concept. Its territory is quite big and has the capability to produce its industrial needs domestically. Chile's economy is marked by a high degree of economic freedom, with a score of 74.4 according to The Heritage Foundation's 2022 Index. This signifies that Chile's economy ranks as the 20th freest globally.

Background

In 2021, Chile experienced a significant economic growth, with its GDP expanding by 11.7 percent, driven by robust exports of minerals, fruit, copper, and wine. Recognizing the need to address waste disposal amidst this period of rapid growth, the Chilean government took proactive measures. The Ministry of Environment (MMA), Ministry of Economy, and the Chilean Economic Development Agency (CORFO) jointly published the Roadmap for a Circular Chile by 2040 (12).

Over a span of two years, this initiative engaged more than 140 stakeholders from the private and public sectors, civil society, and other organizations. Extensive studies were conducted to map the key actors involved, and diverse committees were formed to establish goals and discuss specific initiatives. Additionally, public consultations were held to foster awareness and encourage participation among the broader population.

The roadmap itself is designed to be regularly updated every 10 years, and it sets forth seven core goals along with a detailed action plan. During the development of these goals, the roadmaps of other countries were studied to identify standard indicators that could be utilized and to assess the progress made by nations in this domain.

Those seven goals include:

1. Generate 100,000 new green jobs by 2030, followed by a target of 180,000 by 2040. Currently, according to the World Bank, approximately 9 million people are employed in Chile (13). The ambitious goal of creating

such a significant number of new working opportunities signifies the country's commitment to fostering a sustainable and circular economy.

2. Reduce Municipal Solid Waste per capita The government aims to achieve a 10 percent decrease by 2030 and 2 25 percent reduction by 2040. As per estimates by the Ministry of Environment (MMA), approximately 16 million tons of waste being generated annually, and only a mere 2 percent of Municipal Solid Waste is currently being recycled (14).

3. Reduce total waste generation by 15 percent by 2030 and by 30 percent by 2040. it is important to recognize the significant costs associated with waste collection and transportation. Currently, waste management services in Chile are carried out by 15 companies operating throughout the country. On average, the cost of these operations amounts to approximately USD 35 per ton (14).

4. Increase material productivity by 30 percent by 2030, and by 60 percent by 2040. To enhance material productivity, various strategies can be employed, including reducing the prices paid for materials, improving the availability of suitable materials, and minimizing material consumption and waste (15).

5. Increase the general recycling rate to 40 percent by 2030, and to 75 percent by 2040. It is essential to make recycling services easily accessible to the public, to maximize waste separation, ban non-recyclable items, and maximize revenue from recyclables by establishing appropriate pricing and to make the local market reuse materials.

6. Increase MSW recycling rate to 30 percent by 2030, and to 65 percent by 2040.

7. Recover 50 percent of land affected by illegal dump sites by 2030, and 90 percent by 2040. The term "illegal" refers to the improper disposal of waste in unauthorized areas. Chile currently has over 3,700 illegal dump sites scattered throughout the country. The existence of these sites severely impacts the living conditions of local residents.

In summary, Chile's roadmap for a circular economy demonstrates a wise and elaborate strategy that sets the stage for achieving climate targets and promoting sustainable practices. With clear time frames, lessons learned from international experiences, regional considerations, and broad stakeholder engagement, Chile is well-positioned to make significant progress towards a more sustainable and circular future.

4   Companies Should Be Involved

The closed-loop system in a circular economy extends beyond mere recycling; it fundamentally involves innovation and production, becoming an intrinsic part of an organization's DNA. Companies play a pivotal role in driving the entire circular economy movement. What makes this particularly intriguing is that circular policies offer substantial benefits to businesses, it unlocks new opportunities such as getting ahead of upcoming regulation, increased security in supply chain, innovation and competitive advantage, pricing of externalities and potential shift in taxation models (2).

Effective and visionary leadership from CEOs is instrumental in harnessing the benefits of the circular economy model and driving sustainable economic growth to new heights. By embracing a "circular mindset," businesses can unlock a plethora of opportunities, including job creation (up to 500,000 additional jobs created in France alone), energy efficiency (in the European Union, circular solutions could account for up to 37 percent of total energy consumption), and greenhouse gas emissions reduction (in countries like India, adopting circular practices could result in greenhouse gas emissions being 44 percent lower in 2050 compared to the current development trajectory).

Implementing CE thinking

The EU-LAC Foundation has conducted extensive research on Case studies on Circular Economy, shedding light on the implementation of circular economy thinking (12). In light of this, I would like to share a conclusion drawn from their eight-step guide, which can serve as a valuable resource for businesses and organizations embarking on their circular economy strategies.. The first step for companies is to assess and map their current status in relation to the circular economy so they can identify areas for improvement and set realistic goals for their circular economy journey(develop a business case, define circular economy vision). The successful implementation of circular economy strategies requires cooperation and engagement at all levels of the organization. Senior management should be fully aware of the objectives and actively support the transition towards a circular model. It is equally important to engage key stakeholders, including employees, suppliers, and customers, to ensure their understanding and commitment to circularity. There are many innovative business models that can help companies begin their path(2). For example, the concept of Cir-

cular Supplies promotes the use of renewable energy and recyclable inputs, such as bio-based materials and biocatalysis. Companies like General Motors have made substantial commitments to renewable energy, aiming to achieve 100 percent usage by 2035. Another example is the Sharing Platform model, which connects users of a product and encourages them to share its use. Companies like Uber and Airbnb have built successful businesses based on the idea of access or temporary ownership, demonstrating the potential of this model.

5   Why Is It Hard to Make CE Work in Developing Countries?

Implementing the principles of the circular economy can pose challenges in developing countries, as they often undergo rapid economic and societal transformations. While extensive research has been conducted on the actions of high-income countries towards sustainable development, the topic becomes more complex when addressing emerging economies.

India: Background

Recognizing the significant environmental challenges posed by the most developed economies, the Indian government has taken proactive steps towards embracing the circular economy model and making more sustainable decisions. This shift holds immense potential for India, with projected annual benefits of 624 billion US Dollars by 2050 compared to the current development path, equivalent to 30 percent of India's GDP. These findings are based on a comprehensive economic analysis conducted by the Ellen MacArthur Foundation, focusing on three key areas: cities and construction, food and agriculture, and mobility and vehicle manufacturing. In addition to the economical benefits for households and businesses, by adopting circular economy principles in areas such as cities and construction, food and agriculture, and mobility and vehicle manufacturing, India can achieve a 44 percent reduction in greenhouse gas emissions by 2050 compared to the current trajectory. India's rapid economic growth over the past two decades has resulted in a substantial urban population. By 2008, approximately 340 million people were already residing in urban areas, accounting for nearly 30 percent of the total population. Over the next two decades, urban India is expected to generate 70 percent of all new jobs, which are projected to be twice as productive as equivalent jobs in the rural

sector (11). With an average annual economic growth rate of 7.4 percent in the last decade, India is poised to become the world's fourth-largest economy within the next 20 years (10).

Cases for circular economy; key insights

1.Businesses can unlock material cost savings and enhance their profitability by embracing circular economy approaches. A prime example of this is the shift from traditional car sales to providing vehicles as a service. By transitioning to a vehicle service model, the car industry can not only generate new revenue streams but also increase the overall value derived from each automobile.

2. Embracing a circular economy development path has the potential to significantly mitigate negative environmental effects, particularly in the context of India. By implementing circular economy principles, greenhouse gas emissions can be reduced by 23 percent in 2030 and by 44 percent in 2050, aligning with India's commitments under the Paris Agreement. The construction industry would play a crucial role in achieving these targets by adopting circular economy practices. Through the use of renewable materials and the implementation of recycling and waste management strategies, the construction sector can significantly reduce its environmental impact.Similarly, the adoption of circular economy principles in the mobility sector can have a profound impact on energy consumption in transportation. By transitioning to more sustainable modes of transportation and reducing reliance on fossil fuels, energy consumption in the sector can be reduced by 33 percent in 2030 and by 66 percent in 2050.

3.The adoption of a circular economy in India has the potential to deliver significant benefits to the population, including cheaper products and services, as well as reduced pollution. By embracing circular economy principles, the cost of services for each citizen would decrease, resulting in increased disposable income. The lower costs could also help India implement different initiatives such as the National Food Security Mission. A circular development path could lead to a 38 percent decrease in vehicle kilometers traveled on roads by 2050.

4. Leveraging digital technology. The development of a circular economy relies heavily on a strong foundation of technology and innovation. With the application of advanced technologies and innovative solutions, various sectors such as food systems, supply chains, and sharing platforms can unlock significant benefits.

5. India can avoid getting locked into a linear model. As India becomes

increasingly interconnected with the global market, there is a risk of becoming locked into a basic linear economic model.

Opportunities

1.Cities and Construction. In the construction industry, key principles of the circular economy include the use of renewable and recycled materials, as well as designing buildings to be adaptable and efficient throughout their lifecycle.

When applying circular economy principles to construction, buildings can be designed to accommodate changes in energy generation and usage, and integrate with nutrient cycling systems. Various methods can be employed to enhance the efficiency of urban structures, such as constructing buildings for energy and water efficiency, promoting the multi-use of space, and implementing strategies for the circular flow of construction materials.

2. Food and agriculture. To foster sustainability and resilience in this sector, efforts are being made to adopt circular economy principles, particularly in closing nutrient loops. This approach provides a framework for preserving natural capital, enhancing ecological flexibility, and establishing a stable supply chain. It could implement digital knowledge sharing, also digitized food supply chains, urban farming, and returning nutrients to the agricultural system.

3. Mobility and vehicle manufacturing. India is projected to become the world's third-largest vehicle market by 2030, following Chile and the US (18). To support sustainable growth in this sector, the application of circular economy principles can play a crucial role. Several strategies can be employed, including the adoption of vehicle-as-a-service models, promoting remanufacturing practices, reducing the reliance on virgin materials, and encouraging the development of zero-emission propulsion technology. Given the relatively low car ownership rates in India, the adoption of circular economy principles in the automotive sector has the potential to be rapid and transformative.

6   How to Make Circular Economy Work in Developing Countries

Taking into account the previous discussions, it is evident that there is no specific "start point" within the closed loop involving consumers, businesses, and

governments. While the government often plays a crucial role in initiating the loop, its effectiveness relies on the awareness and understanding of the other two components regarding the importance of collaboration. In the journey towards a circular economy, there are certain factors that can facilitate the transition for emerging economies compared to their developed counterparts. These factors stem from the inherent opportunity for advancement that emerging economies possess in the present moment.

As countries undergo development, they possess a unique advantage in terms of the ease with which they can change their trajectory. The ability to shape their path and establish a foundation for innovation is more attainable, particularly for developing countries that have the opportunity to build their economies from the ground up based on the principles of the circular economy. In developing countries, informal recycling systems already exist, with small organizations playing a crucial role in peripheral collection, recycling, and occasional material sales. Governments have a unique opportunity to not only change direction but also shape public opinion more easily. Unlike in established democracies, developing countries often have less robust political opposition and a greater capacity to promote and influence ideas. The circular economy model offers governments the opportunity to rethink their economic and political systems by reducing the overall cost of materials, which makes it highly appealing. Many developing countries draw inspiration from the agricultural sector, which is inherently connected to nature and often less influenced by industrialization. There are numerous opportunities to explore and capitalize on including peri-urban and urban farming.

What government controls?

Laws. A notable example is the United States and the Inflation Reduction Act. This comprehensive legislation encompasses various aspects, including the taxation of large corporations, energy security measures, and investments in combating climate change. With regards to the environment, this bill has the potential to catalyze the transition to clean energy.

Standards. EPP (Environmentally Preferable Purchasing) rules are established to regulate water and energy efficiency, recycling processes, and the minimization of pollution, among other factors.

Investment. Government is the biggest investor in this system and has the potential to significantly transform the game. While it shouldn't excessively interfere with the marketplace, it can establish funds and specialized organizations to support the development of new technologies and pave the way for entrepreneurs. By providing financial resources and creating a favorable ecosystem, the government can stimulate innovation and drive the transition towards a circular economy.

Education plays a crucial role in the transition to a circular economy. Firstly, it raises awareness among citizens about the ongoing or impending changes, allowing them to understand and actively contribute to the transition. Secondly, education serves as the foundation for future generations, equipping them with the knowledge and skills to drive innovation and shape new regulations. Governments can play a key role by formulating research questions and studying how the circular economy has been implemented in other countries.

Promotion. Mass media is often influenced by various sectors of the government, and can fulfill the requirements and interests of different government departments. The media's coverage and promotion of initiatives such as Chile's Roadmap, for example, contribute to raising awareness and generating public interest in the circular economy.

Business

Inventions. Businesses play a crucial role in driving the concept of the closed loop economy. They create supply chains, construct new structures and adopt advanced technologies.

Collaboration with policymakers and informal economy. Participation in cross-value-chain networks can help businesses to drive a change they cannot create on their own (9).

Working on the demand. Demand in the circular economy is influenced by a combination of factors, including the international agenda, government regulations, and marketplace trends. Businesses play a crucial role as the driving force behind the implementation of circular practices.

The basis for economy. Businesses play a vital role in society by contributing to economic growth, job creation, and global collaboration.

Consumers/Citizens. The cultural aspect plays a significant role in the successful implementation of a circular path, influenced by factors such as the availability of information, personal beliefs, and the existing products and services within a society. The government's promotion and domestic political attitudes can also impact cultural shifts.

Consumers create the demand. The mindset and preferences of customers significantly influence the future direction of businesses and the application of innovative solutions.

Wise consuming. consumers are encouraged to adopt a mindful approach to their purchasing decisions. It goes beyond simply buying environmentally friendly products that have low greenhouse gas emissions or are made from sustainable materials. It also involves considering the entire lifecycle of the products and ensuring they are recycled.

Active political position. The political landscape in some countries may present challenges in implementing new ideas due to limited political parties and diverse opinions. However, the global context is evolving, and emerging countries are embracing new approaches. Taking an active political stance involves engaging in various activities such as voting in local, state, or national elections, participating in protests, and making donations to support causes. These actions contribute to the interaction with policymakers and the establishment of laws that align with contemporary needs.

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