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The Misuse of Technology for Business (Organizational) Gains: A Case Study Approach of Implementing SAP-ISU Technology to Unethically Maximize Organizational Profits.



Abstract: - Given the increasing use of Information Systems (IS) technology in organizational settings, business authors have attempted to explore the impact of IS technology on organizational efficiency and productivity. While IS technology offers various benefits to organizations, we know little about the misuse of technology by corporations to maximize their profits unethically. This paper engages with the question of how organizations ignore ethical considerations and exploit certain functions of IS technology to pursue their interests. The authors argue that exploring this area is crucial to outline the ethical use of technology within organizations. To support this research empirically, the authors conducted a qualitative exploratory case study of the implementation of SAP-ISU (Systems, Applications, and products – Industrial Solution for Utilities) technology by a large utility-providing firm in a Southeast Asian Country that misused the ‘billing function’ of the technology to overcharge its customers for personal gains. Methodologically, the authors have borrowed conceptual clarity from the abduction approach to infer the case study findings. In line with the abduction approach, the main findings of the case study data have been used to extend the ‘affordances of the technology’ framework to illustrate how the SAP-ISU technology provided ‘action possibilities’ for the organization to penalize its customers. The case study is compiled after in-depth interviews with 25 managers and 15 customers and an analysis of the secondary data available on the said topic. The qualitative data is analyzed using NVIVO software. This paper concludes that organizations must adhere to ethical compliance while using the technologies to ensure transparency and improved customer experience.

Keywords: Organizations, Information Systems, SAP-ISU technology, Technology misuse, Ethics, Abduction Approach, Affordances of Technology.

I.INTRODUCTION

The emergence of groundbreaking technologies and the proliferation of technological advancements in recent years have been transforming workplaces and working styles [1]. Digitalization of business activities has boosted organizational efficiency and productivity tremendously [2]. Consequently, authors have attempted to explore the impact of various technologies (Information Communication Technologies - ICT, Enterprise Systems - ES, and Information Systems - IS) on the overall productivity and efficiency of organizations [3][4][5][6]. A noticeable void in the ES and IS literature has been its ignorance of the impact of technology on external actors, ‘the customers’ of the organizations [7]. The focus of IS literature has predominantly been on studying the impact of technologies on organizational and employee productivity [8][9][10]. These studies have argued that although technologies have inbuilt capabilities for facilitating organizational operations, organizations can modify them to serve their interests. The missing argument in the current IS literature is that sometimes technologies are used/misused to produce outcomes they were never initially designed for (unintended outcomes of technology usage) [7]. Some organizations tend to adopt a cavalier attitude when it comes to the ethical use of technology to maximize their economic gains.

The concept of ‘affordances of technology’ that highlights the action possibilities made available to the goal-driven actors via the use of technology gains attention [11]. Affordances of technology framework can help researchers explore the underlying intentions of organizations behind the technology use and how organizational actors (management and employees) exploit the functionality offered by technological systems to achieve their

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desired outcomes. Even though the literature is replete with studies highlighting the affordances offered by technology to organizations and their employees [12] [5] [13] [14] [15], these studies have not engaged with the ethical implications of technology usage. As a result, we know little about organizations' unethical use of technology. This paper attempts to explore how organizations ignore ethical considerations and exploit certain affordances provided by IS technology to pursue their interests.

II. LITERATURE/RELATED WORK

The concept of 'affordances' was initially used in [16] analysis of evolutionary psychology, and he explained it as 'possibilities for action.' In the information system studies, the inclusion of the 'Affordances' concept for underpinning human actors and technology interaction is associated with Norman's work [17]. Contrary to Gibson's work, in Norman's theorization, affordances represented the 'actual and perceived' utility of an object as identified by the users. Norman's idea of 'perceived affordances' is a conflicting view from what Gibson had initially proposed and used the term for. According to Norman, actors' perception of an object is an essential determinant of what can be achieved by using the object [18].

Since affordances are action possibilities, they are neither the properties of IT artifacts nor the characteristics of the user; they arise from the interplay of users trying to accomplish their intended goals and IT artifacts with their distinct functionality [19]. Although technologies are designed/built by humans, once created, they have their properties and powers to enable human actors to achieve their desired outcomes and obstruct certain activities [13]. Such empowering affordances enable human-technology interaction and restraining affordances would obstruct this interplay or prevent it from happening. A clear role of technology requires actors to understand what material characteristics are possessed by the technology to enable and restrict user action, what functions of technology people are willing to use, what are the actors' intentions for its usage, and how new patterns of usage emerge over time [20]. We imply that technologies obstruct some actions as part of their in-built design, but they also provide affordances to the users for design alterations. Human actors have the power to reshape/modify the technology to pursue their goals, work around them to achieve the intended results or decline to work with them. It is therefore argued that to understand the concept of affordances, one must discern the interrelationship between technology and users in use case scenarios [12]. This is deemed helpful in understanding that the material characteristics of technologies will transform various levels during the 'context of use'. Initially, at the development stage, humans will customize the material functions of technology to achieve their intended goals. The modification and alteration process continues even when technologies are passed on to end users-

Barley's [21] work expounds on how constraints and affordances of technology are actualized. By using two hospital cases, Barley explains how owing to the implementation of CT scanning technology, radiologists were compelled to permit sonographers to access information otherwise confined to doctors only. This changed the traditional role relationships between doctors and technologists and blurred the lines of authority/activity (who is responsible for what) in both hospitals. The radiologists allowed this change in routine work practice mainly because radiologists would be accountable for carrying out the examinations themselves in the event of resistance. Hence, the material design of technology caused constraints on the actions of radiologists while enabling the sonographers to access and interpret CT scans.

Unethical Use of Technology

Technology misuse raises ethical questions because it can have unfavorable effects on people, communities, and the environment. Technology misuse may violate people's rights to privacy, autonomy, and informed consent. Ensuring that these fundamental rights are respected and upheld in light of technological improvements [22] is highly significant. Unethical technology usage can have detrimental social and environmental effects. For instance, the uncontrolled use of some technology may result in employment loss and environmental damage [23] The following section explores the literature that explains various scenarios of technology misuse.

Solove's [24] work discusses concerns about privacy invasion and government overreach as a result of developments in surveillance technologies and their improper use, such as facial recognition and data collecting. Another study [25] asserts that people and businesses are now more vulnerable to cybersecurity risks because

they rely on digital platforms. The necessity for effective cybersecurity measures is highlighted by hackers' and cybercriminals' misuse of technology to steal private information, disrupt services, and cause financial loss. According to [26], artificial intelligence (AI) algorithms are not free of biases and can be perpetuated for organizational interests. For instance, the improper application of AI in decision-making processes, such as employment and lending, can promote prejudice and exacerbate socioeconomic disparities. Brignull's [27] study outlined that in order to increase earnings, several online businesses employ dark patterns and manipulative user interface designs that purposefully persuade users to do actions they might not have otherwise. Hence, it becomes challenging to cancel services or keep fees hidden until the very end of the checkout process when users are forced to opt out of subscriptions. According to Atzei [28], some groups in the cryptocurrency market manipulate prices by artificially increasing the value by coordinated buying, only to rapidly sell at a higher price (pump and dump scheme), leaving unwary investors with losses. Another study discusses that some financial technology (fintech) apps provide rapid loans with high-interest rates and target vulnerable consumers, especially those from low-income backgrounds. These predatory lending applications prey on people's ignorance and financial suffering [29]. The discussed literature suggests businesses take advantage of technology for their gain, frequently at the expense of morality and societal welfare. A few more examples of technology misuse by various businesses are demonstrated in Table 1 below:

Table 1. Examples of Technology Misuse

Other examples of Technology misuse	
Facebook	87 million people's private information was extracted by someone using Facebook, and the information was later shared with others who utilized it for political purposes [30]
Twitter	In September 2019, Twitter acknowledged that it had given marketers access to the personal information of its users. Advertisers accessed Twitter users' email addresses and phone numbers [31]
Google	The General Data Protection Regulation (GDPR), which governs how the EU handles personal data, was allegedly violated by Google, according to France's data protection regulator, CNIL, which fined the corporation 50 million euros, or over 57 million dollars. Google needed to adequately inform users how and why their personal information is collected. Additionally, according to Romm [32], Google needed to properly seek users' permission before showing them tailored adverts.
Theranos	A healthcare business called Theranos exaggerated the capabilities of its blood-testing equipment, misleading regulators, patients, and investors [33]
Wells Fargo	Customers suffered financial hardship due to Wells Fargo employees opening unauthorized accounts and credit cards to accomplish their sales goals and receive bonuses [34].
Amazon	Concerns regarding worker rights and privacy have been raised by Amazon's use of technology to monitor and measure the performance of its warehouse employees constantly [35]
Uber	Uber was fined \$20,000 for its "God View" function in 2014 by the Federal Trade Commission (FTC). The "God View" feature allowed Uber staff to access the whereabouts and motions of customers without their consent [36].

III.METHODOLOGY

Researchers from the IS field rely on qualitative methods because information systems are emergent and constantly evolving due to human-technology interaction [37]. The IS researchers have used qualitative methods to underpin exploratory cases, build new or expand existing theories, and introduce new and emerging ideas [38]. The qualitative methods were deemed an appropriate choice for this study as the researchers aimed to explore and observe the emerging nature of technology use/misuse in case-specific scenarios. The authors collected data via semi-structured, in-depth interviews and secondary documented sources and used the abductive approach as

it is frequently used with qualitative case studies, primarily where the researchers work closely with the phenomenon and the interviewees.

The abductive approach does not start with predetermining a theory where the researchers develop hypotheses to test and authenticate that theory, as is the case with a deductive approach [39]. Instead, it provides conceptual clarity to researchers compiling information about the phenomenon based on evidence and logical reasoning. It helps authors develop a new theory/framework or supports the application of an existing theory by extending it to support the main findings of the collected data [40]. To this end, the abductive approach requires the researchers to constantly reflect on the data of their study to align their empirical findings with literature from the field while expanding the existing body of knowledge as part of their contribution [41].

The abduction approach was selected because the authors did not have a preselected theory in mind while collecting data. The authors kept reflecting on the empirical findings of the research to guide and identify possible existing approaches that would help explain the main events of the case study in the most convincing manner. As a result, ‘affordances of technology’ was deemed an appropriate choice to underpin the key findings of the research, i.e., the misuse of technology for overcharging organizational customers. The abduction approach further helped explore the company’s customers’ perception and interpretation of the unethical overbilling practices.

IV. DATA COLLECTION

The updated affordances framework used in this article is based on the empirical findings from the case study of a power utility organization operating in a Southeast Asian country. The case study was compiled using qualitative in-depth interviews and relying on qualitative textual data. The authors conducted 25 semi-structured interviews with management and employees from various organization departments, including accounting, billing & invoicing (B&I), and customer complaints. The authors conducted an additional 15 in-depth interviews with the customers. They utilized the textual data available on the organization’s digital platforms, such as customers’ complaint boards and the company’s Facebook page.

V. DATA ANALYSIS

A qualitative thematic analysis was performed using NVIVO software. A total of four main themes and 20 sub-themes were generated from the data. The main themes in the data included infrastructure development (focusing on SAP-ISU implementation), management issues, customer issues, and customer typology. The three most prominent sub-themes that emerged from the data were overbilling power outages and differential treatment of customers. This paper focuses on the ‘overbilling’ practices theme.

VI. THE CASE

For the empirical contribution, the institutionalization of SAP-ISU technology in one of the prominent organizations operating in the energy sector of a Southeast Asian country is studied. According to the organization’s officials, SAP-ISU technology was being implemented to control three main problems faced by the company: electricity theft (by consumers – a common practice in Asian countries), line losses (due to outdated infrastructural design), and the timely recovery of monthly utility charges (from industrial and residential customers). They expected SAP-ISU technology to improve organizational performance on all three fronts. SAP-ISU technology would facilitate the replacement of old meters with smart meters (capable of restricting electricity theft practices). Its advanced monitoring and evaluation processes would automate the grid operations; thus, the system will notify the company in advance of any required maintenance along with the precise location of faults in the lines causing line losses. Whereas the billing and invoicing function of SAP-ISU would provide real-time data to determine the electricity rate structure, tariffs, Value Added Tax (VAT), and invoicing methods. Although the organization decided to implement SAP-ISU technology in 2009, its implementation commenced in phases in 2011 and was completed in 2014.

Upon completion of SAP-ISU implementation, the organization’s business operations improved, and it managed to earn a profit after 17 years of continuous losses. Although the implementation of the SAP-ISU system positively impacted organizational performance, the data findings suggest that in the post-implementation period,

the customers faced overbilling and rampant power outages. In the next section, the article attempts to present this social repercussion of technological change implemented by the organization.

SAP – ISU implementation and the issues with the Billing

Soon after the implementation of SAP–ISU, when the organization’s customers were interviewed, most of them raised concerns about their monthly utility bills. Three overbilling practices identified from the data included extra unconsumed units, overcounting the monthly consumption days, and unexplained charges (detection) in the billing statements. While most customers discovered several unexplained charges and additional units added to their accounts, others simply noticed a sudden hike in utility bills but were unable to figure out the reason for this change. The customers noticed that their utility bill charges, received despite several hours of power shutdowns, were inflated and did not reflect the actual consumption. During the interview, a customer said:

“How is it possible that we do not have electricity almost all day due to multiple blackouts, but our bill is still so high when we barely use electricity throughout the month?”

The customers considered the organization responsible for violating the billing practices set by the power regulatory authority of the country. As per the regulator’s policy, power companies were only allowed to charge their consumers for a maximum of 31 days a month [42]. Contrary to this, the organization charged its customers for 32 and 34 days of consumption over many months. During the interviews, customers shared that they had registered several complaints on the organization’s online complaint board, but the response from the organization was very slow. The lack of timely response to customers’ complaints prompted them to stage multiple protests in front of their regional organization offices, but the problem of overbilling persisted. Since then, the customers have launched official complaints individually and collectively with the regulatory authorities and other law enforcement authorities, including courts and police.

Although the help desk staff registered complaints in the Complaint Management System (CMS) system and provided the customers with complaint numbers to track their application status online, the customers complained that it took a long time before the organization updated their application status in the system. They viewed the CMS as an inefficient tool and preferred an in-person visit to get an update.

Another issue faced by customers of the organization was its inability to make corrections to the inflated bills or reissue them. The customers complained that even when the organization acknowledged the addition of extra units or days of consumption in their accounts owing to a system error, complaint center staff would still be reluctant to issue revised bills. Customer applications for bill rectification were turned down by citing the system’s (SAP-ISU’s) inability to make changes. The only possible relief provided to the customers was to pay the bill in installments. The public perceived these responses to be mere excuses where a general notion was that the organization was trying to maximize its earnings by penalizing them through unfair billing practices. As one customer shared:

“They [complaint center staff] do not update anyone’s bill after it is issued. I have talked to people in my area, and all of them said they only provide the option to pay the bill in installments. They have never issued a corrected invoice to me or anyone I know”.

The customers raised their apprehensions about receiving hefty utility bills even when they were on vacation or away from home for various reasons. Receiving a higher invoice that did not match their meter reading records when there was no electricity consumption caused the customers to doubt the organization’s billing practices.

The customers mentioned that the power regulator had fined the organization for its flawed billing practices twice already. A review of the recently published literature [43],[44],[45],[46] on the organization reveals that the problem of overbilling customers is still a significant issue, with multiple new and existing customer complaints.

VII.DISCUSSION

Through the case discussion, the article argues that confining the discussion of affordances of technology within organizational boundaries will produce a partial account of the reality that overlooks the impact of organizational

use of technology on the external actors (its customers). The authors have empirically illustrated that the impact of organizational technologies bypasses organizational boundaries and should be presented as such within the existing literature [7]. Additionally, including people who are directly or indirectly impacted by the organizational use of technology helps researchers understand how they view the practice of technology usage. To accomplish this, we need to redefine and modify the existing theories that help explain the use and misuse of technology while focusing on the broader societal context where customers and other external actors are located. In short, the current IS theorization should include customers in the technology analysis if the researchers want to investigate the impact of technology on society and its repercussions.

To fill this void in existing literature, the article borrows the concept of affordances of technology to understand the relationship between the organization, unethical use of technology, and its impact on customers. Utilizing Bernhard's affordances framework, which categorizes affordances in existence, perception, actualization, and effect, the authors extend this model to include an interpretation and reaction view of affordances [47]. While existence affordance refers to the known functionality of technology and the goal-driven actor's competence, precepting affordance underpins how the actors perceive the affordances of technology. On the other hand, actualizing affordance refers to clarity that the outcome of actualizing an affordance of technology can be either desirable (confirming the IT artifact's functionality as prescribed by the design team) or unintended. Our proposed interpreting lens then helps understand how the actors interpret these intended or unintended effects of affordance to decide their course of action, which leads to the development of a reacting affordance in the author's model. Using the affordances construct, this study looks at the possibilities of action and the consequences of those actions for organizations and their customers. This updated affordances framework (derived from Bernhard's work) is presented in Figure 1 in the appendix.

Although this work has expanded the affordances of the technology theory to allow for a more in-depth analysis that includes customer discussion as well, this research is still developing and can be further expanded by borrowing conceptualizations from the field of ethics to create a more comprehensive theoretical framework.

VIII.LIMITATIONS

Since this is a work in progress, it does take cues from the extant literature on ethics and the affordances of technology to propose that merging these fields can facilitate enriched discussions of technology misuse and its impact on customers. However, this paper's theoretical conceptualization of ethics is still in its development phase. Another limitation of this study might be the use of qualitative methods that restrict the study to a few individuals only. Although the qualitative approach helps the researchers explore the developing subject matter in detail, the scope of making cross-disciplinary comparisons is limited.

IX.CONCLUSION AND FUTURE RESEARCH

This study has attempted to combine the existing affordances of technology and ethics framework to allow a comprehensive analysis of organizations, their usage of technology, and its impact on the customers by applying and extending Bernhard's conceptual framework of affordances. Building on Bernhard's work, we introduced two new affordance lenses: interpreting and reacting. The updated framework delineates that technologies offer varying possibilities to organizations, and their safe use is contingent upon the ethical practices of the organizations. The study empirically explains how this can be done using a South-Asian company case to help understand the impact of organizational misuse of technology on its customers and the repercussions of this impact. The authors suggest that future researchers can use this proposed theorization across various disciplines to understand the impact of technology on multiple external stakeholder groups as it succinctly encapsulates the perception and reaction of external actors towards unethical organizational practices.

It is the moral responsibility of businesses to proactively address emerging issues while implementing technology [48]. Collaboration between technologists, ethicists, policymakers, and other stakeholders is necessary to address ethical issues. A comprehensive awareness of the potential effects of technology can be fostered via interdisciplinary discussion [49]. Doubling up vigilance would force organizations to strictly abide by the corporate governance norms and reduce the unethical use of technology. The creation and observation of ethical frameworks can direct technical advancement and their application. Transparency, accountability, and inclusion

should be incorporated into the development of new technology [50]. Businesses must align their strategy of innovative technology implementation with moral principles by acknowledging the possible adverse effects of technology misuse and encouraging responsible technological development. This paper aims to initiate cross-disciplinary conversations and open opportunities for ethical reflection associated with the affordances of technology.

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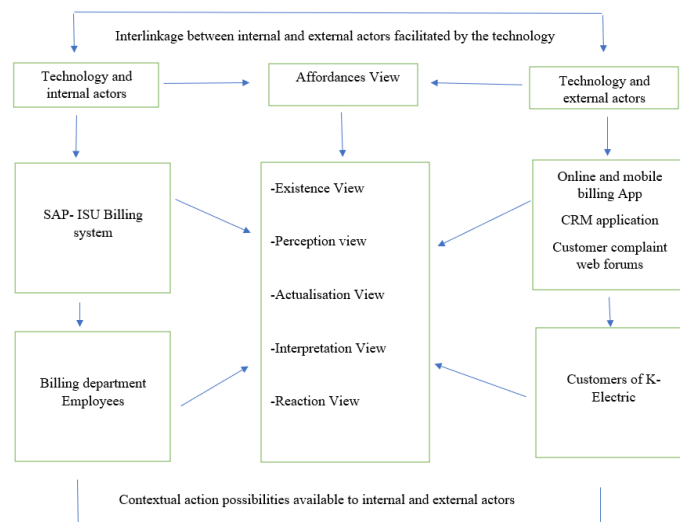
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APPENDIX

Annexure 1

Fig. 1. Contextual action possibilities available to internal and external actors.



Annexure 2

	A. High income neighbour	B. Middle income neighbour	C. Low income neighbour
1. Power cuts	3	3	11
2. Overbilling	1	7	17
3. Voltage issues	0	0	3
4. Complaints handling by I.	5	4	10
5. SAP-ISU Functionality	0	0	1
6. Non Payment from Res.	0	0	0
7. Electricity Theft	0	0	8
8. Old infrastructure	2	0	6
9. Corruption	1	1	5

Annexure 3



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