MORAL OBLIGATIONS OF COMPUTERS IN DRUG RESEARCH

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Abstract:
To look into the ethics of using computers in pharmaceutical research, as well as the issues that come with it and start by looking at how philosophers think about computer ethics. With regard to computer ethics, the philosophical community is unsure whether or not it is confronted with a whole new topic of study. We identify the issues and areas in which philosophers have shown the most interest with regard to computer ethics, namely, the questions of privacy, liability, ownership, and power, after addressing the issue of how to treat computer ethics in terms of its philosophical classification.

Introduction

As a general observation, the philosophical community has been slow to grasp the ethical and conceptual issues offered by the introduction of computers.

Despite the fact that computers had been around for a long time, the Philosopher's Index, which organizes and catalogues philosophical literature, had no entries for "computer ethics" until 1985. Three articles, monographs, and books were the only things that were classed and mentioned under "computer ethics" in the five years between 1985 and 1989. Between 1990 and 1994, there were just two such things on the list. Between 1995 and 1999, 19 things were listed, and between 2000 and 2004, 18 items were listed [1,2].

America is where computer technology and computer utilization first emerged, yet there is a difference between how America approaches privacy issues and how Europe does, which has been with "complete, comprehensive law." In light of this, no national discussion on the protection of privacy, which was among the most significant and early concerns about computer utilization is there. The need for a "broad, encompassing law" or an "extensive, overriding policy" on the privacy rights was not expressed. Until the concern of maintaining privacy became more pressing, there was little discussion on the subject [3].

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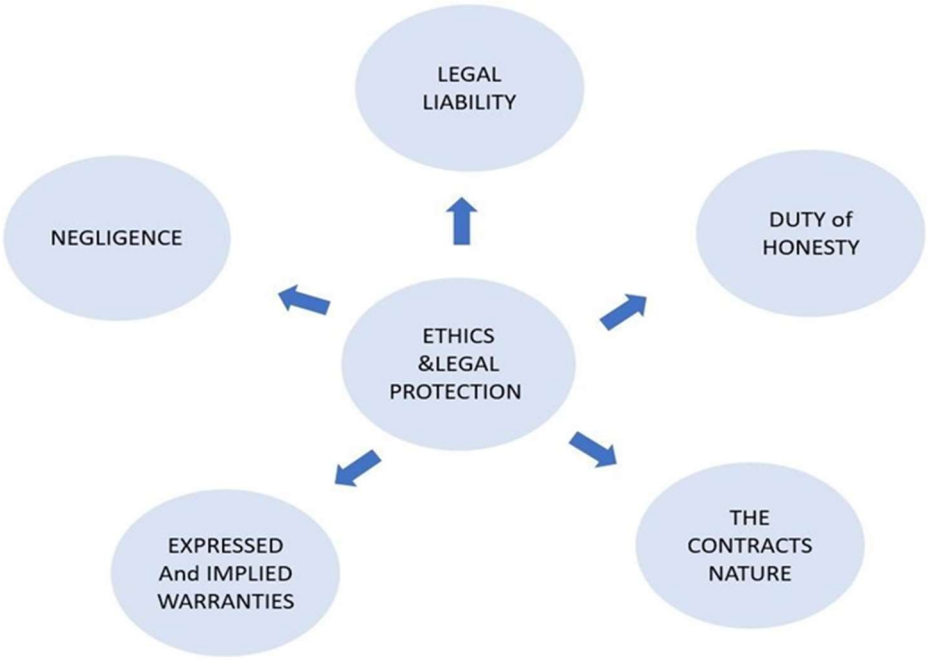

Fig 6: Ethics and legal protection

Ethical Issues:

Privacy, Liability, Ownership, Power Deborah Johnson's Computer Ethics is the absolute greatest source for quick and somewhat extensive access to the body of information linked with computer ethics (3rd edition, 2001). The first version of that work, which is the first book mentioned in the Philosopher's Index into "computer ethics," presents very conceptual framework for questions of secrecy, liability, ownership, and power. Almost all of the analysis retains its significance despite its early appearance in the brief history of computer ethics.

The moral idea of justice, particularly distributive justice, will be central to the relationship involving computer use and power. This formal rule of justice, according to several business law textbooks, such as Velasquez, is that "equals should be treated similarly and unequal should be treated unequally." However, it is silent on what characteristics make people equal or unequal, it does incorporate essential ethical concepts such as consistency and impartiality into justice.

For example, a person may have an illness that is both highly contagious and lethal. People coming in contact with the individual face a strong probability of contracting the sickness, putting their lives at risk. Making public the sick person's medical status may provide the most net benefit as a course of action. However, the sick person's medical record is protected in terms of public disclosure under a right to privacy. Is it true that the utilitarian benefit outweighs the individual's right to privacy, and if so, are there any circumstances where this information should never be made public? [81]

Privacy

The prior type of question is pertinent to the topic of computer use as well as privacy concerns. In reality, computer usage may have changed how we think about privacy and how we should think

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about it. Prior to the invention and widespread use of computers, invasions into an individual's privacy were mostly limited to a specific time and location. The incursion could be carried out, but only to a limited extent. Computers, as Johnson points out, have transformed the nature of privacy intrusion as well as the degree of privacy intrusion.

As a result, there is a need to reconsider privacy and the concept of applied ethics, particularly because the magnitude of intrusion may alter the nature of the offence qualitatively.

Three general features of the privacy rights have been highlighted by philosophers. The aspects of relevance, consent, and manner must all be considered when intruding on one's right to privacy. The requirement of the invasion of privacy-rights as holding a straight relation regarding topic at hand is the element of relevance. For example, in employer-employee relations, the firm may occasionally trespass on the employee's personal life in order to explore work-related issues. These "encroachments" must be related to the employee's job.

The element of consent will have been satisfied if researchers adhere to accepted norms of conduct, such as the Nurem-burg Code (1947) and the World- Medical Association's Declaration of Helsinki. In truth, the theory regarding medical community as "informed consent" is extremely severe approach of the factor of acceptance when it comes to intrusions into privacy. It's worth noting that a specific person subject of research's "informed permission" may not be sufficient for data mining judgments [82].

Cultural concepts stretch or contract the right to privacy, and it is a basic reality that culture changes. In fact, concerns to the privacy rights were seen as predominantly coming from the government in the 1970s. The expression "Big Brother is watching" implied that government authorities had access to residents' personal information. However, a massive information business has emerged, with private parties posing the greatest threat. Pharmaceutical researchers do not have to, and should not, contribute to the amount of data available on a person. Furthermore, considering the emergence and techniques of data analysis, researchers should take measures and include prohibitors in their research to prevent any specific subject from being identified.

Liability

Legal responsibility, the duties regarding integrity, the contract ‘s constitution, fabrication, expressed and guarantees that imply, and negligence are all topics relevant to liability and computer use in general [82]. The distinction here is between software as a product and software as a service. For an ethicist researching computer ethics, most of these topics are uninteresting. Legal culpability, for example, is less relevant in philosophy than it is in jurisprudence.

The difference between software as a products and software as a service appears to be more important for research purposes. The fact that software is sold and utilized as a bundled commodity, as Prince implies, means that liability applies. The maker is held accountable if the programme contains a flaw. However, software is frequently designed with a specific aim in mind, particularly in research. As a result, rather than selling a product, the programmer offers a service. Liability may not lie solely on the programme provider as in case of software designed particularly for a specific research aim. In such cases, the researcher should be very explicit about his or her

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objectives and state them to the coder [83].

In fact, one ongoing debate in the pharmaceutical sector revolves over accuracy, which has ramifications for liability. People from both inside and outside the industry are debating how to make research more visible to drug users. Several businesses, like Eli-Lilly and Company, has stated that their research would be made publicly to consumers can see it and make their own decisions regarding a drug's efficacy. Scientific research, of course, is created from the beginning to be shared and replicated by other scientists.

This trend toward study transparency should lower liability for medication producers and scientists, increase the possibility of improved accuracy, and result in more educated drug consumer [84]. The issue of accuracy is intertwined with that of responsibility, and if current trends towards Pharmacogenetics and tailored medication therapy continue, the significance of accuracy and, by extension, liability will only grow. But with greater emphasis on precision also comes greater understanding of a person. There would need to be strong restrictions as to who has accessibility, especially ones including research, if the confidentiality requires safety.

However, as the value of accuracy rises, so does the amount of information available about a person. If the privacy rights require protection, severe restrictions on who gets access to programmes, particularly those involving research, may be necessary.

Ownership

The subject of how to consider software is among the most philosophically intriguing issues surrounding computers. Programs do not have clear analogues. Computer software does not always share parallels with paintings, poetry, music, or writing.

The courts have struggled with this issue since determining the applicable law has proven challenging. To date, a variety of devices have been utilized to incorporate and resolve the issue of software ownership. The right to property, of course, limits the scope of the subject of ownership.

Despite the fact that the issue of ownership appears to revolve around an overly broad conceptual topic, the fact is that developers who supply services may have some rights of ownership over the study and its outcomes [85,86]. In conclusion, not only is it necessary for the researcher and programmer to interact just for accuracy and responsibility, but it is also necessary to resolve the problem of intellectual rights. It's worth noting that the resolution of ownership also affects problems of accountability for malfunctioning programmes.

Power

The question of power, according to Johnson, is critical for the development of computer ethics. When Mason [80] recognized availability as a challenge for individuals exploring computer ethics, he made the same point. If Moor [87] is correct, the authority may be more crucial than it has ever been. He claimed that nowadays tech revolution is progressed via two stages, namely introduction and the permeation stages. He believed that the computer uprising has reached its third phase, the

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power stage. This stage must review the effect of computer on human existence, particularly in the fields of politics, socialization, and the law.

The scientist and the humanist should converse more, according to C. P. Snow. The 3rd culture, the technologist, should be included in the talks, analyses, and discussion. As a result, while we have not offered detailed and specific analysisof the issues related to the computer use within the pharmaceutical sector, believing that such analysis is best left to the specialized philosopher conducting concept in computer ethics, we do recommend that applied scholars be included in the research team. Furthermore, in the dynamic and adaptable world of technology, practical philosophers—not simply computer scientists—should assist in the development of proposed policies and codes of conduct [88].

Code of Conduct Relevant to use of Computers

A professional ethical behaviour has multiple purposes: it allows a profession to self-regulate; it states the profession's agreed-upon ideals; it alerts members to issues they might not be aware of otherwise; and it provides recommendations for ethical behaviour. In the pursuit of their job, pharmaceutical researchers have specific responsibilities and obligations. A recent study listed the 10 most critical behaviours in scientific research that constitute punishable offences, and then utilised this list to interview scientists to see if they had done any of these offences.

Researchers add new ethical difficulties in the conduct of their study by using computers in pharmaceutical research. When the Association for Computing Machinery (ACM), the biggest organisation of computer professionals in the United States, published 1st Code of Professional Conduct in 1972, it was well aware of the potential. Other computer-related groups have created rules of ethics to assist govern their members' actions.

We've identified a few key concepts that apply to the utilization of computers regarding pharmaceutical research areas. The following ideas can be used by pharmaceutical researchers to assist guide their behaviour while using computer technology for pharmaceutical research [89].

"Provide support in their regions of competency, being honest and straightforward about the limits of their education and experience," according to ACM principle 2.01. As a result, researchers who lack the necessary skills in designing computer applications should enlist the help of someone who does.

ACM principle 3.10 states that even individuals who are suitably qualified should "ensure adequate verification, debugging, and reviewing of software and documentation on which they work." Most spreadsheet apps, for example, have errors.

New ethical problems and conflicts have arisen as a result of computing technology's applications. In addition to other aspects of doing pharmaceutical research, scientists who use computer applications in their work must be conscious of computer ethics. Codes of conduct, similar to the ones developed by ACM, can aid in the development of ethical computing principles for pharmaceutical research [90].

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COMPUTER IN MARKET ANALYSIS:

An analysis of the market includes data about industries, customers, competitors, and other market characteristics. It also establishes the supply-and- demand connection for a certain commodity or service. These insights aid in making better selections about potential marketing initiatives. How acceptable is a proposed offer for a specific market, according to market analysis? It forms a basis for marketing decision-making. Suppliers and buyers gather and assess data and to make purchasing and sales decisions. It provides an overview of the market's existing state as well as potential new market prospects.

Computer-assisted market analysis has numerous advantages over traditional market study methodologies. Companies can use computers to conduct surveys without having to go out and meet people. Businesses can collect information through conducting surveys on their own websites, using 3rd Internet surveying providers, or mailing out email questionnaires [91].

Benefits of using computer in market analysis:

Increased marketing precision.

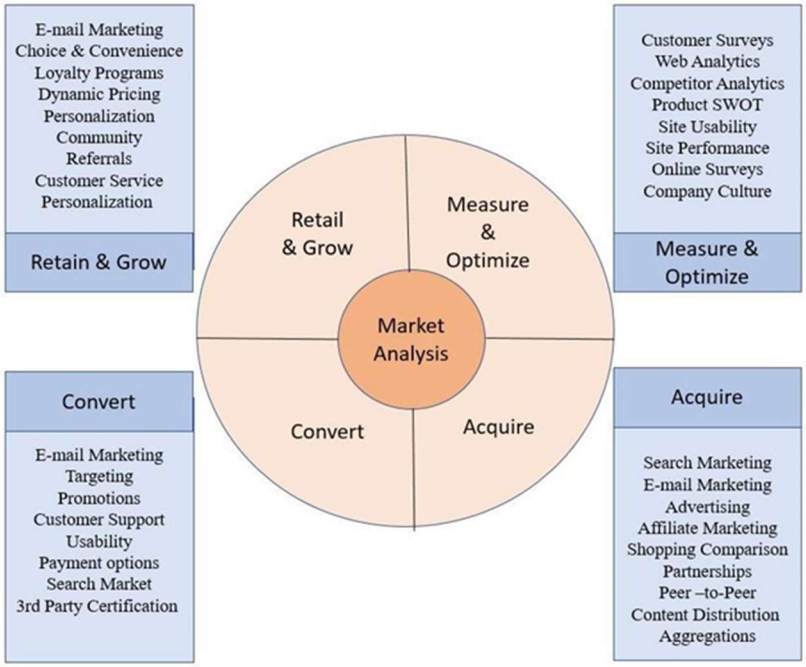
Enhance the campaign's capacity Campaigns for Marketing Automation

Create New Communication Channels

Provide Effective Sales Support

Improved collaboration

Improved collaboration



(Fig 7)

Market analysis software

Marketing analytics software is made up of processes and tools that allow you to monitor, measure, and optimise your marketing performance in order to make it more effective and receive the required return on investment (ROI) In particular, it aids in determining and comprehending how

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marketing programmes are performing. Marketing analytics software optimises and simplifies marketing campaign administration and tactics. It may collect data and examine all marketing actions across all audiences [92].

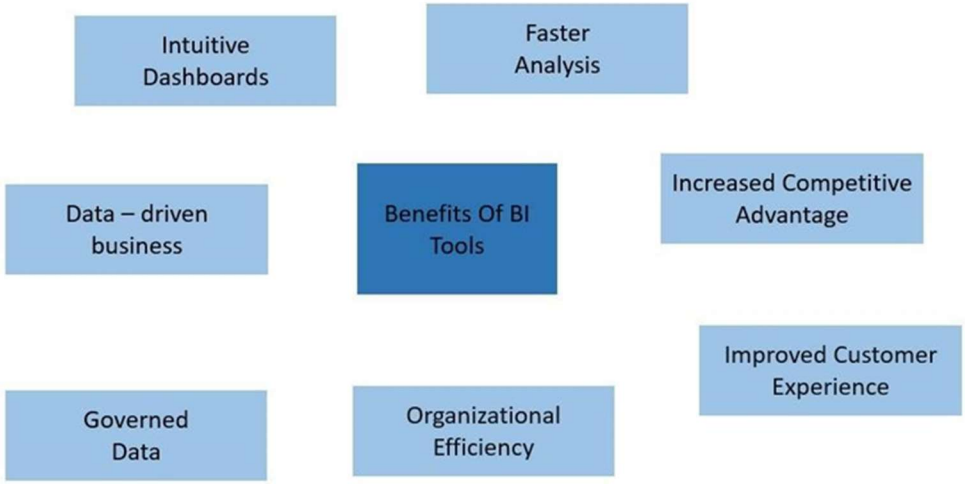
Data about customer preferences, habits, behaviour, history, and other factors are examined to provide insights, allowing marketers to fine-tune campaigns, identify effective marketing techniques, and make data-driven decisions [91].

Marketing analytics solutions provide these features and analysis

Predictive analytics $ optimization: E-optimization and predictive analytics Marketers utilise predictive analytics technologies to improve marketing efforts and gain a better understanding of the ROI on their campaigns.

Customer analytics & segmentation: Customer data, categorization, and web searches are used to evaluate customer behaviour and create campaigns around it.

Attribution Modelling: This is a statistical procedure based on approaches for determining which elements in a prior campaign or channel successfully resulted in customer conversion. It is also often Attribution modellingregression included in analytics tools and Bi (Business Intelligence) software [93].



(Fig 8)

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