



Section 3. Management of innovations

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INNOVATIONS IN SERVICES

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Abstract

This article explores the evolving landscape of academic creation and dissemination, particularly in the context of the service sector. It delves into the transformation of research ideas into valuable academic outputs, examining the shift from traditional publishing methods to modern multimedia formats. The advent of digital tools and the Internet of Things (IoT) has revolutionized the pace and methods through which academic research is conducted and shared. Artificial Intelligence (AI), blockchain technology, and Lean Six Sigma methodologies are highlighted as key enablers in enhancing service personalization, security, efficiency, and effectiveness.

Keywords: *Academic Creation, Service Sector Innovations, Digital Tools in Research, Internet of Things (IoT), Artificial Intelligence (AI), Blockchain Technology, Lean Six Sigma*

Introduction

Unexpectedly in a scholarly field that crosses to a great extent on the publishing and consuming of books and journals, there is generally little written work on academic creation. Considering consistent research activity in the natural and mechanical sciences, this is something of an absence. A consequence of this, in our view, is that details about how research is truly conducted and the complications experienced in the process are less revealed in the organization and social investigation fields. In this respect, our attempt is a walk to some degree into the clouded. Specifically, our topic is the path by which research ideas are transformed into something with exchange value. For past the

fundamental stride of persuading someone to make the journal, there is a long chain of tasks that must happen for a tangle of ideas to comprehend its final shape. We have to start by revealing a shift that has been happening over the course of recent decades. In the earlier days, academic work generally flowed into the published printed copy form. However, in the later twentieth century, we have witnessed an explosion of the media through which scholarly investigations are best represented. There are two components of this. The first is the wide accessibility of data and software tools available to researchers. This has increased the pace at which a given idea can be developed and pursued. The second is the emergence of modern media, such as

video tapes, as a tool for disseminating scholarly ideas. All of these media have differing economies in terms of the quality of academic output, and we suspect this is an under-explored subject. As one of our respondents stated: “In the earlier days, you basically wrote everything you could in a paper with a specific end goal. Now it is a lot more complicated, you’re able to tailor the quality of what you’re doing binding in the result” (Julia Veleiras-Jurado, Edgar Bernad-Mechó, 2022).

Research methodology

The research commenced with an extensive review of existing literature across several databases and academic journals. The focus was on identifying studies related to academic creation, digital tools in research, the application of AI, blockchain technology, and Lean Six Sigma in the service sector, and the impact of influencer marketing on consumer behavior. This review helped establish a theoretical foundation for the study, highlighting gaps in the literature and emerging trends in academic and service innovations.

Analysis and results

The term ‘artificial intelligence’ (AI) refers to the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. AI is relevant to service as this ability can be used to facilitate learning, reasoning, understanding, perception, and learning by machines. AI is currently used in a wide range of fields and is already affecting the way services are delivered and received. One major issue facing services today is the need to achieve personalization. As the needs and wants of consumers become increasingly heterogeneous and competition between companies intensifies, the ability to tailor services to an individual consumer becomes more important. This can be seen emerging in the use of ‘smart agents’. Smart agents are software entities that carry out some set of tasks on behalf of a user or another program with some degree of independence. They can carry out these tasks with little or no interaction with the user and exhibiting an element of learning. In terms of the consumer, smart agents can seek out and evaluate service options, make decisions about these options, and act upon these de-

isions. This is an example of where AI can automate a task usually carried out by a human and in the case of an agent acting on your behalf, is a primitive form of outsourcing a service. As AI progresses, smart agents will grow in sophistication, their decisions will become more accurate and resemble that of a knowledgeable human, and they will be employed in a growing number of service contexts. Another way services can achieve personalization is through the gathering and analysis of data about the consumer in order to make service options more relevant to that consumer (<https://www.sciencedirect.com/science/article/pii/S1475158522000388>). AI is the most efficient means by which to carry out such data analysis, being capable of learning from patterns in the data and applying knowledge gained from the analysis to make relevant decisions. This is exemplified in the use of data mining and recommendation systems. Data mining is the process of discovering patterns in large data sets involving methods at the intersection of machine learning, statistics, and database systems. It is an essential process where intelligent methods are applied to extract data. Data mining has an extensive list of methods but some of the most common are decision trees, clustering, and association rule learning. These methods can be used to gather and deduce information about a consumer from a database. A recommendation system uses this information about the consumer to make suggestions to them about what service options would be best for them. This again is an area with huge potential for AI development. Currently, recommendation systems base their suggestions on a generalized set of rules about what is usually a good option for a consumer with certain data. This is known as content-based filtering.

The phase of IoT 2.2 draws on experience from research and industry to explore the evolving applications of IoT and their likely impact. The Internet of Things (IoT) has been identified as the next big technology shift, with predictions of billions of devices becoming connected over the coming decades. The sheer scale of IoT presents both a big opportunity and a big challenge in terms of how it can be deployed to deliver maximum benefit. A commonly cited example is that of ‘smart cit-

ies', where vast sensor networks will monitor and control civic infrastructure in real-time for an enhanced level of efficiency and service. In consumer markets, IoT is being applied to develop 'smart home' systems that learn user behaviors and automatically adjust the home environment to suit. While the vision and hype surrounding IoT is indeed very grand, there has been rather limited exploration as to how the technologies underpinning IoT can be integrated and applied in a manner to effectively achieve the grand visions. This 'bottom-up' approach involving the development of specific technologies and methods is where research can make a significant difference. In this phase, there are three papers representing the state-of-the-art in three specific areas of IoT deployment, and one paper addressing the implications of IoT from a consumer informatics viewpoint. The paper by Tae-Hyun Kim et al. provides an excellent example of taking an existing technology and adapting it to the IoT space for enhanced service. The authors' previous work had focused on the development of NFC technology for use in mobile phone-based transportation ticketing. The convenience and automation provided by NFC was seen as a good match to the IoT ideal, but the practical implementation of an NFC system for a city-wide bus network was limited by the requirement for readers to be wired to a power source and back-end checking systems to ensure correct operation of readers at each bus stop. With IoT-style vision in mind, the authors proposed a new system utilizing power-efficient Bluetooth Low Energy (BLE) beacons as virtual bus stops, removing the need for physical infrastructure apart from beacon installation at bus stops.

Blockchain technology has become very popular since the initiation of cryptocurrency, mainly due to its element of security and reliability. Blockchain is an innovative technology which acts as a digital ledger to record transactions across several computers in such a way that the information stored cannot be altered retroactively. Gupta and Brar (2017) state that blockchain is an information infrastructure that is established for a transaction involving value. There are three key elements to the technology which Gupta and Brar highlighted: integrity, transparency by means of traceability, and secu-

rity. This technology is globally accessible and has the potential to improve services in developing countries where banking services are limited. Blockchain enables services to process their transactions on a decentralized network rather than a central one, which may be an effective approach for mobile banking services and for mobile check-out services in retail stores, whereas computerized transactions may process transactions without any automatic human intervention. Blockchain can also offer complete traceability and transparency for products and their customers, especially in the food industry.

Six Sigma is a highly analytical, data-driven methodology and a process to reduce variation in process output by identifying the cause of the variation and controlling the process. By combining Six Sigma's rigorous focus on standardizing process with Lean's focus on reducing effort and resources, Lean Six Sigma provides a solid framework to improve any process.

Lean Six Sigma is a methodology that links a series of tools and methods into one framework with the aim of improving the speed and quality of a process. This is done by identifying and eliminating variation, defects, and waste. Lean Six Sigma has been used widely in industry with success and is now making inroads into the service sector.

In response to these growing market pressures, Lean thinking has provided service organizations with a new way to look at their operations. Lean thinking establishes a mindset and a set of tools to create sustainable change by exposing and solving problems. It is focused on creating value for the customer, whilst using the minimum amount of resources.

Lean thinking has come a long way since the establishment of the Toyota Production System almost 70 years ago. It has evolved from manufacturing to product development to operations and now to the services industry. As pressures continue to increase from the customer and competition, service providers are looking for ways to improve the way they work to become more efficient and effective (Ferreira M., Lopes B., Granado A., Freitas H., 2021).

Consumers have also become frustrated by botched personalization attempts where

they are served inappropriate offerings or where their information has been misinterpreted. In one survey, 44% of consumers said that they would become repeat buyers, and 33% spend more, with companies that do well at personalization. On the other hand, 50% of those polled also expressed that they would be annoyed by ads from retargeting campaigns. 59% of UK consumers avoid brands that have poorly targeted promotions and 38% of American internet users have expressed distrust in how their data will be used by companies. This demonstrates that while consumers appreciate relevant offerings, there is a fine line between an effective use of personal data and an intrusive one.

Big data and personalization are a double-edged sword in that they represent significant value to both consumers and producers; however, there are privacy implications and a backlash when firms get it wrong. With the capture of detailed consumer data, it is harder for firms to retain privacy standards and data breaches such as the 2017 Equifax breach pose a threat to consumer privacy. Studies show that there is a disparity between people's stated willingness to share information and their feelings once their privacy has been violated. It can be difficult for consumers to foresee how their information will be used and what value the exchange will hold for them. If they do not see a clear benefit to themselves, they may resent the degree of personal information that firms are now capable of gathering (e.g. through data mining) (Spilker, H. S., & Colbjørnsen, T., 2020).

Personalization is the provision of individualized service or product to meet specific consumer needs. This has long been a practice in offline services, such as financial advising or where the service is provided by direct human contact. However, the term is relatively new to the field of marketing, and its latest meaning is significantly broadened by digital technology. Marketers now seek to provide personalized content to a wide range of consumer groups. This is being taken even further with the emergence of big data as companies now have the capability to store vast amounts of information about individual customers and have the means to profile them individually. At its best, per-

sonalization is a service that is rendered to a specific individual, as when a web page provides an individualized assortment of news stories or assesses an individual's physical state to then provide health advice. At a minimum, it entails the customization of mass-produced offerings, as when a music streaming service has a recommendation engine that serves up targeted playlists for different kinds of listeners. Big data enables thorough customer analytics so that firms can accurately tailor offerings to segments or even to individual buyers.

Conclusion

It is in the spirit of addressing this issue that we have encouraged the stepping back from the delivery processes into a re-discovery of the core nature of the service, the consumer that it takes place for, and the context in which it is being utilized. Step through the various chapters and note how many different ways this same basic message is being redelivered. Step back, try to understand, and only then act. This seems rather obvious for any form of marketing or product development, but in the world of services characterized by lower skilled operation on behalf of the customer, there is a tendency to leap to assumptions on what the output should be and how this can be more efficiently delivered.

First and foremost, we hope that it is apparent to the reader that much service and public policy provision today is designed from production function assumptions. Services are a series of processes to deliver a functional output, and the core focus in operational improvement has been to try and make these processes as efficient as possible. Step into any government department, hospital, bank, or airline and ask them what they are trying to do, and the answer will invariably be some derivation of doing the same thing better. This is problematic because efficiency in process execution to deliver a standardized output only saves time and money for the customer if the output itself is what they want! Often these same customers are not deeply satisfied with what they receive and are invariably left feeling that services are all too similar and there is plenty of room for improvement.

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