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INNOVATION AND TECHNOLOGICAL CHANGE: ITS IMPACT ON DEMAND AND SUPPLY IN THE MARKET

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ABSTRACT

Innovation and new technologies have the potential to change markets and create opportunities for new and innovative companies. This article aims to analyse the impact of innovation and technological change on demand and supply in the market. In this research, a case study was carried out on the consumer technology market and an analysis of the technology stock market. The author uses data from various sources such as surveys, literature reviews, and social media. The results of this study show that innovation and technological change can increase demand in specific markets, such as the mobile phone market or the computer software market, but can also shift demand in specific sectors, such as in more traditional industrial fields. In addition, innovation and technological change can also affect supply in the market due to pressure to increase efficiency through automation and better use of technology. However, innovation and technological change also create new competition and benefit consumers in terms of price and quality. In its conclusion, this study concludes that innovation and technological change are important factors in determining demand and supply in the market and must be taken into account by companies and governments when formulating their market strategies.

Introduction

(Rofaida, Aryanti, & Perdana, 2019) Suggests that innovation is the management of all activities, including idea formation, technology development, manufacturing processes and marketing of new and developed products. According to Law No. 18 of 2002, Innovation is a research, development, and engineering activity aimed at developing the practical application of new scientific values and contexts or new ways to apply existing science and technology to products or production processes (Purnamawati & Panjawa, 2021).

In the era of globalisation, we must be able to continue to innovate and create new, unique, and more efficient products and services than previous products and services. If they continue to innovate, they can sustain their business long-term (Lestari, 2019). It stands to reason that if a person doing business never develops a new product, the public will get bored (Ramadhani, 2018). In addition, competition in the modern business world is fierce, starting with price, quality, and, most importantly, product (there must be something new). Suppose they cannot maintain the existence of their products. In that case, it will be displaced by competitors who can continue to develop new products and take over consumers' attention. If consumer attention shifts, we can ensure our products remain safe (Ramadhani, 2018).

As we know, technological progress is indeed beneficial for humans because of its sophistication. However, these advances can also impact people's lifestyles, making them dependent, as demonstrated by smartphones or advanced phone technology (Ambarwati, Wibowo, Arsyiadanti, & Susanti, 2021). Why is this happening? Since smartphones are considered sophisticated phones with various features, they allow us to do many things, such as use the camera, interact with social media, and even complete tasks (Putri & Idris, 2020).

Before smartphones, a mobile phone could only do a few things, such as send messages and call, and some could browse, but the features were limited. These technological advances have caused significant changes in human life, including civilisation and culture. This change also affects the value of society (Wulansari, 2017). This digital technology is a technology whose operation no longer requires much human labour and aims to use an automated system with a computer system. Technology plays an essential role in the economy, for example, introducing new digital payment methods, such as digital wallets, in online stores that do not require face-to-face meetings (Yusuf et al., 2023).

The economy is driven by two things, namely supply and demand. Economists often use "supply" and "demand" to describe the forces driving a market economy. However, the market mechanism is the relationship between consumer demand and producer supply, so the price created combines the two parties' forces. Therefore, demand and supply behaviour are fundamental to business activities (Agustina, 2023). The idea of supply and demand is one of the basic concepts in economics. Demand is the goods the market demands at a certain price level, income level, and time. At the same time, supply (supply) is defined as the amount of goods producers offer to the market at a particular time and price level. Demand and supply are influenced by price, and vice versa; the cost and quantity of goods traded are influenced by the market's balance between demand and supply.

Economic activity arises because of interactions in the market, where the interaction brings together demand and supply. In the exchange of goods and services between consumers and producers, legal tender is needed to measure the price of a good or service. Along with the times, all community activities are influenced, measured and determined by money as a medium of exchange. Since the beginning of Islam, money has been known as a medium of exchange, namely dinars and dirhams, and is also used to fulfil one of the worship requirements of Muslims (Fatmawati & Yuliana, 2019). In addition to non-cash payments using e-money, debit cards and credit cards, inflation can also affect the demand for money.

In view, this article will analyse how innovation and technological change affect demand and supply in the market and how economic and social factors affect market dynamics in an era of technological innovation. This article aims to provide a clearer understanding of the impact of innovation and technology on demand and supply in the marketplace, as well as how companies can integrate technological innovation into their strategies to increase competitiveness and remain relevant in an increasingly complex and dynamic market.

Research Methods

The type of research we use is a literature review. According to (Sahidi, 2021), the literature review is research conducted by experts by collecting various books and journals relevant to the research's challenges and objectives. This method highlights many hypotheses relating to the problem being researched or studied and is a reference point when discussing research findings.

According to (Hignasari, 2021), a literature review has several purposes: informing readers of the results of other studies closely related to the research conducted at that time, linking research with existing literature, and filling gaps in previous studies. A literature review is all that may have been read, both published and only as a private collection, often associated with the theoretical framework or foundation, namely the theories used to analyse the research object.

According to (Prihatmi, Istiqoma, Anjarwati, 2022), this literature review activity aims to collect scientific data and information in the form of theories, methods, or approaches that have developed and have been documented in the form of books, journals, manuscripts, notes, historical records, documents, and others. The literature review research method is carried out by collecting secondary data from various sources such as journals, articles, books, documents and other publications related to the research topic.

Results and Discussion

Information and Communication Technology (ICT) impacts markets, labour, and economic growth. This information and communication technology has experienced significant developments over the past few years. The development of information and communication technology in a country reflects the state of its economy. The higher the development of technology and communication, the more advanced the country's economy. However, keep in mind that the development of information technology also has a negative side, where misuse of technology can contribute to criminal acts. In this discussion, more will be explained about the impact of technological developments on a country's economy in the demand and supply sectors in the market.

In a country's economy, the role of information technology is now considered very important. The development of information technology brings significant changes in the economy, overcoming distance and time barriers that were previously obstacles in supporting economic growth. Various applications are created to facilitate ease of access and support economic growth. Technological factors also impact the output of goods and services produced by producers. The higher the level of technology, the faster the goods are delivered, so the supply also increases. The prices of goods, including raw materials, also affect supply. Examples of the results of technological innovations that play an essential role in the economic growth of a country include the use of AI or Artificial Intelligence in terms of financial analysis, economic forecasting, decision support, and so on related to civil.

Regarding the relationship between technology development and employment, it can reduce costs in the production process so that it can be allocated to open new jobs. Thus, the unemployment rate can be reduced by utilising technology appropriately and optimally. The high unemployment rate requires the government in Indonesia to implement policies related to technological developments so that they can be adjusted to provide more access to new jobs, as well as the ability to use available information effectively. From here, governments or producers can provide higher offers at relatively lower prices to consumers as factors of production increase, thanks to existing technological developments. Moreover, this will also impact consumer demand, which will increase along with the supply provided.

Payment system innovation in the form of electronic payment instruments mentioned above is caused by banking sector innovation and the public need for practical payment instruments that can provide convenience in conducting transactions. The ease of transactions can encourage decreased transaction costs and stimulate economic growth.

The new economic growth theory proposed by Solow, later known as Solow's model theory, emphasises that technological progress has a vital role in a country's economy; technological progress is maintained in several strategic positions of each growth theory. Therefore, the existence of technology and knowledge is an essential factor in economic growth and development.

Technological innovation in promotional strategies facilitates companies to reach a broader target market more effectively. With technological advancements such as social media, websites, e-commerce platforms, and other digital tools, companies can reach consumers worldwide and promote their products or services more quickly and efficiently. This provides new opportunities for small and medium-sized companies to compete with large and international companies.

In addition, technological innovations in promotional strategies can also improve the company's operational efficiency and reduce production costs. This phenomenon provides financial benefits and boosts economic growth by creating new jobs. An example is the emergence of digital industries, such as e-commerce, mobile applications, and cloud computing services. Innovation in promotional strategies creates an environment that supports the emergence of new companies with creative ideas, opens up new opportunities for business actors, and promotes overall economic growth.

Here are some examples of cases where innovation and technological changes affect the dynamics of demand and supply in the market:

1. Transformations in the transportation industry, such as Uber and Gojek, have changed how people order transportation services. These companies are leveraging technology to improve customer experience, leading to a decrease in demand for conventional transportation services while demand for technology-based services is increasing.

2. The online store revolution, such as Lazada and Shopee, has changed people's buying patterns. Due to the convenience of online shopping and its shipping efficiency, many people are turning to this method of shopping, resulting in a decrease in demand for conventional retail, while online stores are experiencing an increase in demand.
3. Major technology companies like Apple and Samsung constantly release new products according to the latest trends and innovations. This encourages consumers to replace their gadgets even if the old device still works. The impact is seen on the supply side, where companies must continue to produce new products to meet market demand.

Those examples of innovations and technological changes affect the market's supply and demand dynamics.

Understanding Demand and Supply

According to (Adriani, Sinaga, Puspitasari, and Sinulingga, 2022), demand is the willingness or desire of consumers to buy goods at different price levels over a certain period. (Venny & Asriati, 2022) States that demand will increase or increase when a price falls, and vice versa. If the price is so high, the buyer may buy very little because the buyer's money is also limited, whereas, at the high price level, the seller produces his goods and sells them for a profit. Because the price is relatively high, consumers switch between products to find substitutes or substitutes. The demand function is a derivative of consumer behaviour that strives to achieve maximum satisfaction by carrying out activities to consume goods and services that can be purchased with limited income constraints.

(Hoetoro, 2018), in his book Introductory Microeconomic Theory, he states that in the substitution effect, the demand for a good will change in the direction of its alternative price. In this study, if the price of essential commodities increases, the demanded amount will decrease. And vice versa. The demand for an item follows the law of demand. According to the law of demand, when the price of a good rises, then the amount of demand falls, and all other conditions are the same. That is, the price level affects the level of demand, but the demand for a good can be influenced not only by the price of the good itself but also by the price of other goods. Exchange or add these products, advertising, product quality, and other factors.

According to Ahman (2009:98-99). "Supply is the overall amount of goods and services offered at various possible prices prevailing in the market in a given period. From this understanding, there are 2 (two) economic variables (magnitude), namely the number of goods offered or to be sold and the price level. These two variables show a relationship with each other. At the same time, time variables are ignored or considered constant. The position of the price variable in the concept of supply is a variable that affects the amount of goods offered, often called an independent variable. At the same time, the amount of the goods provided is an influenced or dependent variable.

Meanwhile, according to Rahardja (2008: 32), "Supply is the amount of goods that producers want to offer (sell) at various price levels during a certain period". From the two opinions above, it can be concluded that supply is the overall amount of goods and services that producers want to offer at various price levels prevailing in the market in a given period.

Factors affecting demand and supply

Several factors, including the following, determine factors that affect public demand for goods:

1. This has the same meaning as the law of demand: if the price of a service or a good is falling from the usual effect that arises, buyer interest will be higher.
2. The price of other related goods, such as substitutions or substitute commodities. The quantity of purchases of services and goods will change if the prices are closely associated with changes in the prices of commodities or substitutes.
3. Per capita income level. Of course, a person's income also affects the volume of his purchases. If the income is high, then the number of purchases will follow. Conversely, if the income is low, the number of purchases is reduced.
4. The level of taste.
5. Population.
6. The producers' efforts to increase sales differ from the producers' efforts to increase purchase volume.

Several factors, including the following, determine the factors that affect people's supply of goods:

1. The price of the goods themselves. For example, when a price is cut from outside, buyers flock to buy these products/goods; some even buy in large quantities, so producers increase the amount. Conversely, if the price of a service or good rises from the regular price, the buyer reduces the purchase of the service or good, and then the producer reduces his sales.
2. Prices of other related goods. If an item closely associated with a particular item changes, then the supply of the item/item changes.
3. The cost of obtaining the factors of production.
4. The purpose of the company. The level of technology (production technology) used by producers significantly affects the provision of advanced technology, resulting in more and more efficient production of goods.
5. Number of Merchants/Sellers. The more traders in an area, the more product supply increases.
6. Government Policy.

Law of Demand and Law of Supply

1. Law of Demand

The Law of Demand in entire states that if the price of a good rises, then the quantity of goods demanded will fall, whereas if the cost of a good falls, then the amount of goods required will increase. The law of such demand will apply, assuming other factors beyond price must be considered constant (Ceteris Paribus). This is the original concept of its inventor, Alfred Marshall.

2. Law of Supply

As the original concept of its inventor, Alfred Marshall, the straight comparison between price and offer is called the Law of Supply, which can be interpreted as follows: An explicit comparison between price to the quantity of goods offered, that is, if the price rises then the supply will increase, and vice versa if the price falls then the supply will also fall assuming ceteris paribus (Ahman, 2009:102).

Conclusion

After discussing technological innovations and changes and their impact on demand and supply in the market, it can be concluded that technological developments have significantly impacted market dynamics. Innovation and technological changes have triggered consumer behaviour, shifting market demand to more sophisticated, efficient, and environmentally friendly products or services. Meanwhile, the industry must keep pace with market demand by offering products or services that are more innovative and effective in meeting consumer needs. In addition, the existence of more sophisticated and efficient technologies also improves productivity and production efficiency, ultimately improving the offerings available in the market.

In this context, innovation and technological development are essential in overcoming future economic and social challenges. Therefore, industry players and governments must encourage innovation and research to create increasingly advanced and effective technology. As a suggestion, industry players can continue utilising technology to improve production efficiency and provide products or services more relevant to consumer needs. The government can also provide support and incentives to encourage innovation and technological developments that positively impact society and the environment. Similarly, the general public can make technology a tool to increase efficiency and productivity in daily life and reduce negative environmental impacts.

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