

Prosumerism: Learn more, make more and share more

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1. Introduction

It was several years ago when one of the co-authors of this chapter (MRW) got acquainted with citizen science, while waiting for his daughter to receive her degree scroll from the University of Sheffield. Emeritus Professor William Leatherbarrow was conferred an honorary Doctor of Science degree then and was introduced as a well-respected authority on Slavic literature. Interestingly, he is also a noted amateur astronomer and was the president of the British Astronomical Association for the period 2011-2013. Professor Leatherbarrow, in his acceptance speech, urged the audience to close the gap between two cultures with special reference to C. P. Snow's book *The Two Cultures and the Scientific Revolution: literary intellectuals at one pole – at the other, scientists*. The *Times Literary Supplement*, in 2008, included the book in its list of the 100 books that most influenced Western public discourse since the Second World War. Citizen science is the public involvement in inquiry and discovery of new scientific knowledge. The fields that it advances are diverse, including computer science, medicine, and psychology. People not necessarily scientists, from different background and expertise, may contribute to projects that involve several to many individuals collaborating towards common goals. Personalities like C. P. Snow and William Leatherbarrow have shown how to connect the dots, i.e. to benefit from the two cultures and innovate for the sake of humanity. So have Ibnu Sina (Avicenna) and Al-Biruni, and the list goes on. Citizen science, crowd funding, open source, and Creative Commons licences are just a few examples of people getting together to learn more, make more and share more. To drive home this point during the current Movement Control Order (MCO), MRW had the chance to learn from YouTube different ways of tying

necktie knots. In fact, anyone with a little motivation may make some money by writing articles on HubPages or posting videos on YouTube teaching others his or her skill. More importantly, consumers will be able to access freebies available on the Internet because of active peers learning more, making more, and sharing more. This has a knock-on effect of reducing the costs of products. The portmanteau ‘prosumer’ comes from the words: ‘producer’ and ‘consumer’. It was first coined by Alvin Toffler in his 1980 book “The Third Wave” [1]. It is about empowering the ordinary consumers and has the potential to revolutionise the sharing economy by active participation of consumers. It also means consumers are also producers. Today, many of us are already prosumers because we benefit from the latest technologies. There is the case of the urban electricity ‘prosumer’, a consumer of electricity who also produces it and can sell it back to the grid, often through a rooftop solar photovoltaic system. For major cities in developing countries, these prosumers could be an essential ingredient in meeting the growing need for electricity.

2. Academic Excellence and USIM Mission 2022

According to Imam Al-Ghazali academic excellence is defined as the progressive attainment of Prophetic Virtues, Wisdom and God-Consciousness through the pursuit of meaning, certitude, and guidance [2]. Today, university students are not only expected to assimilate knowledge; but now there is a shift to operational criteria – what students are able to do, and their ability to apply knowledge. Therefore, prosumerism has been associated with the shift towards student-centred teaching and learning activities, with the emphasis on student engagement and the *co-production* of knowledge. Interestingly, this does not change the role of graduates as servants and vicegerents of Allah SWT. USIM Mission 2022 is to transform USIM into a high impact Glokal Islamic Science University in the year 2022 – refer to Figure 1. Its five strategic thrusts will provide

students with a unique learning experience from the day they enrolled right through the first year after their graduation.



Figure 1: USIM Mission 2022

3. Malaysia Digital Transformation [3]

Malaysia has recognised the importance of digital transformation from as far back as the 1990s, with the establishment of the National IT Council as well as the launch of initiatives such as the National IT Agenda and the Multimedia Super Corridor. Digital Malaysia is also very much aligned to Industry 4.0 which is a result of the rapid advancement in ICT. What is the impact of the Covid-19 pandemic on the pace of digital transformation? Are organisations, especially small and medium enterprises (SMEs), now more inclined to invest in automating and digitalising their operations, and are companies in general accelerating their digital transformation plans in the wake of the pandemic? Malaysia Digital Economy Corporation (MDEC) director of business digital adoption Muhundhan Kamarapullai says the pandemic has been a wake-up call. “Covid-19 has definitely altered the drive for digital transformation where, in order to sustain and survive,

businesses need to inject digital [technology] into their business operations.” In digital skills development, initiatives such as MDEC’s #mydigitalmaker aims to impart skills like coding, app development, 3D printing, robotics, embedded programming, and data analytics and expose students to careers related to digital technology. The goal is to transform Malaysian youths from digital consumers into digital producers. It is because of the availability of the world wide web and advances in ICT such as the internet of things, big data, deep learning and 3-D printers now is the right time for the realisation of the prediction by Alvin Toffler back in 1980 on the rise of prosumers.

4. Eureka!

Human beings are highly intelligent primates that have become the dominant species on Earth. We have been created by Allah SWT to solve problems as described in Surah al-Balad verse 4 the meaning of which “We have certainly created man into hardship”. However, for every hardship there will be ease as Allah SWT mentioned in Surah As-Sharh verses 5 to 6: “For indeed, with hardship [will be] ease. Indeed, with hardship [will be] ease”. Problems can easily be managed if humans are creative and innovative. A simple definition of creativity is connecting dots, making connections where none existed before. Innovation may be defined as taking creativity to the next level i.e. to implement the creative ideas. Examples of innovations are the typewriter by Christopher Sholes, the early computer by Charles Babbage in the early 19th century, the light bulb by Thomas Edison and the telephone by Alexander Graham Bell.

There are four types of innovations – see the Figure 2.

Types of Innovation



([Altin Kadareja](#),

<http://www.innovationmanagement.se/2012/10/15/risks-of-incremental-differential-radical-and-breakthrough-innovation-projects/>)

- 1. Incremental:** incremental changes to existing outputs (improvisation)
- 2. Differential:** new outputs for the same (existing) markets
- 3. Radical:** new outputs for new markets
- 4. Breakthrough:** new outputs that create new markets (revolutionary)

Figure 2: Types of innovation.

The following is an example to illustrate the types of innovation as shown in Figure 3.

Types of Innovation (Example)



Baseline – clear glass lenses to correct short sightedness

- 1. Incremental:** coloured glass lenses
- 2. Differential:** coloured plastic lenses
- 3. Radical:** contact lenses
- 4. Breakthrough:** lensless solution (e.g. LASIK)

Figure 3: An example to illustrate the types of innovation.

How do we get that spark or Aha! Moment (or Eureka!) to trigger the innovation? The previous chapters have shared many tools and methods to reach that state. Two further tools to compliment

those already discussed are Strategic Intuition and ASIT. The former is popularised by William Duggan, through his books “Napoleon’s Glance” [4] and “The Art of What Works” [5]. Duggan states that *Eureka!* was a very important factor for the successful Napoleon Bonaparte military campaign where decisions were made by combining an analysis of experience and insight. The four elements of Strategic Intuition are examples from history, presence of mind (expect the unexpected), flash of insight (*Eureka!*) and the resolution to move forward and confront obstacles. TRIZ is the Russian acronym for the "Theory of Inventive Problem Solving" and developed by Genrich Altschuller, a Russian where he discovered that 90% of patents involved solutions close to the problems. Advanced Systematic Inventive Thinking (ASIT) by Dr Roni Horowitz on the other hand, has simplified TRIZ into five tools. The five tools are the multiplication tool (fish will make fish tasty), division tool (rocket multistage fuel combustion), breaking symmetry tool (car headlamp), removal/trimming tool (helicopter rotor) and unification tool (flow of grains in a curved pipe). Mostly, the solution is near the problem and one is encouraged to ask ‘Is the problem also the solution?’.

5. Prosumerism

The portmanteau ‘prosumer’ comes from the words: ‘producer’ and ‘consumer’. Prosumerism as described by Alvin Toffler developed through three waves. The first wave was an Era of Agrarian Economy thousands of years ago. People in this era produced products for their own daily consumption and land was the basis of life, politics, culture, family, and structure. The sources of power are human and animal muscle power, water, and wind while the important tools are winches, catapults, winepress, wedges, hoist, and levers. Three major innovations in this era are accurate clocks, printing press and new development in iron and steel. The second wave was the industrial revolution or industrial age. This age utilised sources of energies and the establishment of managerial concepts such standardization, specialization, synchronization, corporation and

centralisation. Production of goods and services for the market mushroomed and people concentrated on energy, money, and power. Imperialism took place and it happened to spread civilization and it transformed small scale trading into big business. The second wave happened until the 17th century. The third wave is, the information or knowledge age. The concept of Do-It-Yourself (DIY) rise since 1970 when a do-it-yourself pregnancy test kit invaded the pharmacies of France, England, Holland, and other European countries. People also learnt to carry out surgical procedures, handle self-examination of breast and pap smears and handle stethoscope and blood pressure. The self-care idea was trending and accepted by the people. It was about empowering the ordinary consumers. This has the potential to revolutionise the sharing economy by giving control back to consumers. It also means consumers are producers.

Prosumerism is best described by how the media industry is today. Media digitisation and decentralisation have disrupted the incumbents by bringing down prices and increasing share options for consumers. The advent of social media has significantly increased the opportunities for the common people in cities and rural areas to create, distribute and profit from their innovative minds without going through the conventional media company. Living proofs include the international and local celebrities: Justin Bieber, Najwa Latif and Naim Daniel. They started their career after they were discovered through their videos in YouTube. The same goes for news and publications; there are many bloggers, independent writers supplementing the mainstream media and self-made authors. These talented and passionate amateurs are prosumers, and it is not all about money, and the best part is many of their contributions are made available for free. Today, we can easily download free open source software, courseware and even hardware designs. This means more consumers may leverage on these freebies and their active participation in production having a knock-on effect of cheaper products. Naturally, this has redefined the concept of sharing, and just like AirAsia famous tag line “Now everyone can fly” it may generate

one like “Now everyone can be a prosumer”. All these are possible because of the introduction of the Internet of Things, 3-D printers, blockchain and advanced artificial intelligence.

The main idea behind prosumerism is altruism. Altruism is an act of selflessness or unselfish for the wellbeing of other people. There is a believe that fundamentally humans are self-interested, but some research found that our first impulse is to cooperate rather than to compete. For example, toddlers spontaneously help people in need out of their genuine concern. Charles Darwin associated altruism with sympathy or benevolence which is an important part of the social instinct. With the tagline of Together Everyone Achieves More (TEAM) and Learn More, Make More and Share More, altruism is important to bind any social groups and families together to help them cooperate and thrive. Normally people will expect to be rewarded or to receive something in return either tangible or intangible but the beauty of altruism is to ensure members in a community have a backup when needed through the altruistic impulse and reciprocation of kind deeds.

In Malaysia prosumerism is especially suited to rejuvenate and revolutionise our cottage industry. Since the millennials and Generation Z do have the tendency to multi-tasking, freelancing and not committed as traditional employees, coupled with the many disruptive technologies this will reduce the need to gather in one location to collaborate on an economic enterprise. It is even more enticing because there is now a new business model based on new ways to fund (crowd funding and blockchain), collaborate on, promote low cost enterprises, and organised in a peer to peer manner. The main challenge of the middlemen will be addressed and eliminated. Consequently, there will be a shift away from big business towards the interest of consumers in the creation of wealth and the development of the economy. The government may eventually need to rethink many policies such as tax incentives, intellectual property rights and the role of the Central Bank. Prosumerism with the proper check and balance in place offers the light at the end of the tunnel to arrest the aggregated dark side of the three industrial revolutions such as climate change,

depletion of natural resources and extinction of species. This is by closing the gap between the rich and the poor. It offers hope to liberate the B40 and the bottom billion to enjoy a better life and participate to meaningfully contribute to humanity.

6. Mathematics and Prosumerism

Here, we illustrate how to implement 'Learn More, Make More and Share More' for three examples from mathematics. These are what a prosumer do.

Example 1

Problem Statement: The German Carl Friedrich Gauss (1777 - 1855) is one of the world's most famous mathematicians. He had a lazy teacher, and one day he wanted to keep the kids busy so he could take a nap; he asked the class to add the numbers 1 to 100.

Answer: Let us write the first few numbers in two rows:

1 2 3 4 5 6 7 8 9 10

10 9 8 7 6 5 4 3 2 1

Notice that we have 10 pairs, and each pair adds up to $10 + 1 = 11$.

The total of all the numbers above is

Total = pairs * size of each pair = $n(n + 1)$

But we only want the sum of one row, not both. So we divide the formula above by 2 and get:

$$\frac{n(n + 1)}{2} .$$

Now this is cool. It works for an odd or even number of items the same!

Learn More: There are several ways to add the numbers [6].

Make More: You may then write simple computer codes for the different ways to find the answer.

Share More: Next, you may make a video on how you obtained the answer and share. Perhaps one where you record your voice over your PowerPoint slides (entry level), and another with multi-media effects.

Example 2

Problem Statement: Let X represent a RM5 note, and Y represent a RM10 note. Given there are 20 notes, and these add up to RM100 worth in a bag. How many RM5 notes and RM10 notes are there in the bag?

Answer: Consider

$$X + Y = 20$$

$$5X + 10Y = 100.$$

These may be written as a matrix equation.

$$\begin{bmatrix} 1 & 1 \\ 5 & 10 \end{bmatrix} \begin{bmatrix} X \\ Y \end{bmatrix} = \begin{bmatrix} 20 \\ 100 \end{bmatrix}.$$

Solving the matrix equation, we get $X = 20$, and $Y = 0$.

We may also, change the number of notes in the bag to 12. Hence, we obtain

$$X + Y = 12$$

$$5X + 10Y = 100.$$

Learn More: You may also solve the above by first eliminating X (or Y) from the pair of simultaneous equations.

Make More: You may then write simple computer codes for the different ways to find the answer.

Share More: Next, you may make a video on how you obtained the answer, and share. Perhaps one where you record your voice over your PowerPoint slides (entry level), and another with multi-media effects.

Example 3

Problem Statement: Ronaldo, Messi and Salah passed a ball among themselves as in the Figure 4 below. How do we describe the movement of the ball to a computer?

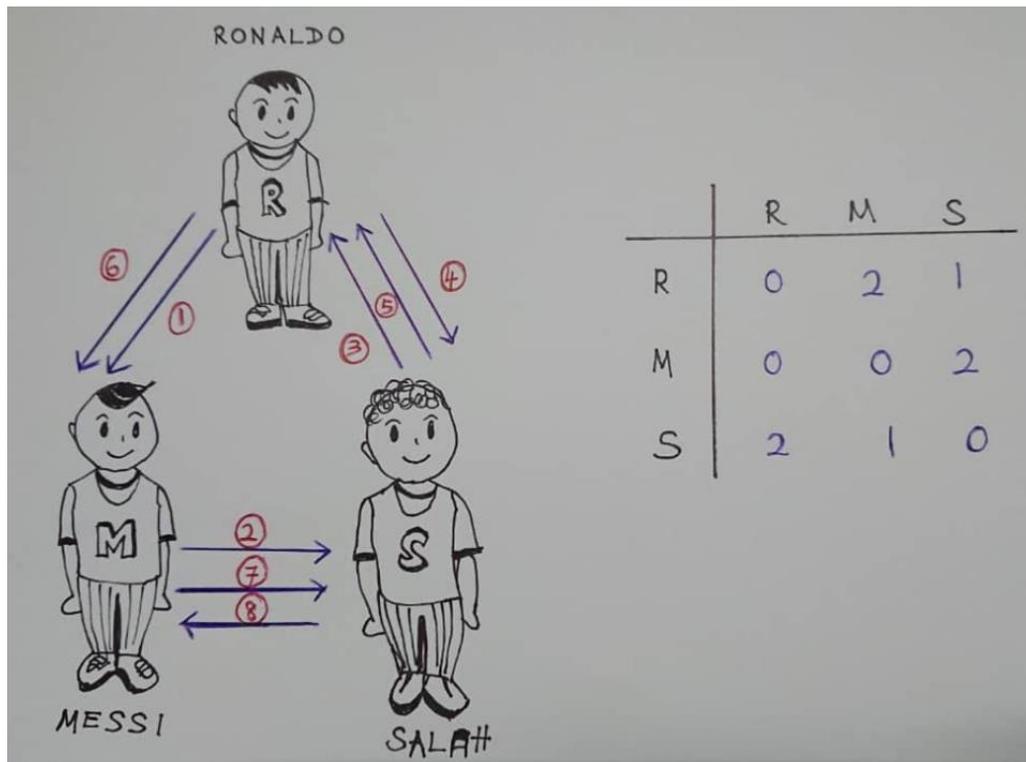


Figure 4: The ball was kicked among the three players; starting with Ronaldo to Messi.

Answer: We need to translate the ball movement into a matrix. A computer will be able to analyse a matrix. In this case, it will be a 3x3 square matrix as shown on the right side of the Figure 4. Ronaldo does not pass the ball to himself. This is also the case for Messi and Salah. Hence, we get zeros as entries in the diagonal of the matrix.

Learn More: The number of passes of the ball between the same three players may be increased to twenty and so forth. You will need to modify the 3x3 matrix. You may also increase the number of players.

Make More: You may then write simple computer codes for the different scenarios to find the corresponding matrices.

Share More: Next, you may make a video on how you obtained the matrices and share. Perhaps one where you record your voice over your PowerPoint slides (entry level), and another with multi-media effects.

7. Exercises

Exercise 1

A good contemporary example of co-production is recent trends in the fashion industry towards promoting more sustainable producer and consumer behaviours through new processes like ‘mass customisation’—combining personalization with mass production; ‘crowd design’—using crowdsourcing to create designs that can be customised into products; ‘closet sharing’—the setup of a private or community-powered ‘infinite wardrobe’ so that customers don’t own a clothing item but rent it for the time it’s needed, and ‘DIY fashion’—digital clothing models used by independent designers produced directly by customers using 3D printers [7]. Discuss how you could benefit from this.

Exercise 2

Discuss the differences and similarities between prosumerism and entrepreneurship.

Exercise 3

Discuss how you can support prosumerism.

8. References

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