
When the fog falls - information overload as a challenge from the business education perspective

Congress track: GLOBAL BUSINESS EDUCATION

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In this day and age, market information is extremely valuable. At the beginning of the 1990s, in the USA alone, specialists were paid 375 billion dollars a year for information services and products. The year 1991 is even considered by some researchers as the beginning of a new era, when global investments in information technologies exceeded investments in production assets. In the "information era" the nature of traditional products and service changes.¹ The multibillion-dollar information market exists due to an asymmetry – buyers are uncertain and lack knowledge, hence, they buy it from those who know more. Knowledge has become an item of exchange. The knowledge and information market is ruled by laws different to those in the market of material commodities, .e.g. businesses that sell information of low quality can yield the highest profits, whilst sellers of high quality information can have difficulties staying in the market. Messages of high quality fight for survival. In the case when a manager is seeking information about a very difficult market - for example regarding mobile telephony in Indonesia because they want to invest 100 million dollars there - they have to take into account the fact that the forecasts will not be accurate. The investor, with an aim to decrease their own risk, purchases more than one report about the market, provided that each of them has been compiled in a different way and presents the market from a different angle. In light of the fact that the reports have been made in various ways, it can be said that they are not substitutes – they offer different information on the same subject. In such a situation, the reports will almost be like complementary goods for the investor. Considering that the offers will not compete with each other, they can establish monopolistic pricing, i.e. "businesses that sell information of low quality yield the highest profits!"

Traditional models of describing economic phenomena based on such paradigms as Alfred Marshall's law of diminishing returns - stating that the increase in supply of a given commodity in the market results in the decrease in margins and profits of sellers in the given market – are still used in educating managers. As we know, the network economy works under the principle of increasing returns. It means that the more copies of a given information product the manufacturer supplies to the market, the higher their value becomes. Additionally, effective marketing methods in the network economy have also changed. Success of a given product is increasingly determined by irrational factors, not possible to foresee or programme. For instance, Apple owes its i-pod success to chance - white headphones were designed for it to distinguish them from computer headphones. As a result, the white headphones became a "fashion item". Customers started buying the i-pod just to be able to show their individuality in the street.

The main challenge for modern management is transforming companies from "information seekers" to "information choosers".

The thing is that every day a company receives valuable information in a jungle of worthless information or misinformation. The ability to choose the right information at both the level of individual employees, as well as the level of a whole company, is currently the key to success.

At the end of the 20th and the beginning of the 21st century - thanks to a great advancement in information technology, and progressing since the 1960s - it was possible to create very efficient IT systems. Managers began to treat seriously the promise of a "well-informed decision". Information has always been the basis for making managerial decisions, but the possibilities offered in recent times by ICT solutions have considerably increased the expectations of managerial staff towards what can be called "information support". The ways in which people use information have become the subject of research. The thing is that generally there is a great deal of irrationality in how people use information. Sanford Grossman, an economist from the University of Pennsylvania, described a certain phenomenon which was named "Grossman's paradox". It is assumed in classical economics that a market functions correctly if all market participants have full information. They can, as a result, mutually predict the consequences of their actions and adapt their strategies accordingly. Ideally, markets would not offer any stimuli for the market participants, as everyone would have full information about the competition's activities. In such a situation, no activity would bring profit. Companies which would not benefit from new information would stop acquiring new information. Grossman suggests that "perfect information" is pure fiction. In other words, the market economy in actual fact develops THANKS TO the fact that companies do not possess all the information.

The experiments of the Security Studies Program (SSP) carried out by the renowned MIT together with the American Army show that the amount of information gathered is not necessarily conducive to the improvement of military situation in a battle field. The military strategy theorist Sun Tzu stated that "*He who knows himself and the enemy shall always win. He who doesn't know his opponent but knows himself, shall be defeated at times and at times shall win. He who knows neither himself nor the opponent is inevitably doomed for failure.*" Sun Tzu was not, however, able to imagine to what extent technology would advance and how many different methods there are of acquiring information, not only about the enemy himself, but also about his actions on the battlefield. It is obvious that the information alone changes little. It is interpreting and connecting the facts together that can bear fruit in the form of a tactical plan or strategy. Conclusions drawn can at times be contradictory, particularly if the amount of information possessed is vast. Sonars, satellites, spy planes, and a whole range of other ICT devices have been developed with the mere purpose of acquiring accurate information about an adversary's actions. Today's technology has certainly removed some of the 'fog' from the strictly confidential information about the strategic moves of an

¹ Ph. Kotler, G.S. Carpenter, L. Lodish, *Tajniki marketingu*, K.E. Liber, Warszawa, p. 356 – 361.

adversary. Thanks to this, the movements of hostile units are just as visible to us as the movements of our own army. Additionally, numerous communication channels make it possible for commanders to follow the actions of their armies from large distances, and control the situation on an ongoing basis. Analyzing the data about the movements of an opponent's troops may be by definition unclear, and clarifying it on the basis of a range of available information can lead to contradictory conclusions. However, it's not the information we have that decides the outcome, rather than luck, preparation, experience and involvement in a given undertaking. Also, when a threat to human life appears, the time element gains in significance. Decisions must be made quickly. Thorough analysis of all the information might be impossible, especially when a commander of armed forces or a flight controller starts to receive from 10 to 1000 times more information per time unit. Having detailed information is not necessary, and it's the key factors that can ensure survival of the threatened people that become significant. It's not a question of "How much information we have?" that becomes important, but "What does this information mean?" and "HOW can it be used?"

Until recently it was taken for granted that increasing the amount of processed information leads to an increase in efficiency and optimization of resource use (e.g. saving ammunition). During war games it would appear – to everyone's surprise – that up to five times more ammunition than normal was used during similar actions. The sudden increase in the amount and quality of information meant that new targets appeared in the decision area. It turned out that the formula:

more information = better information

does not, however, ensure more effective and better decision-making. A new quality has also been introduced by the increasing prevalence of false information. Sun Tzu described in *The Art of War* the importance of revealing false information and simulating fleeing in panic when fighting an enemy, as this was supposed to lure the adversary into a trap – *"pretending to be weak when you are strong, pretending to be hungry when you are full, showing fatigue when you are rested"*.

False information is becoming an increasingly significant problem, e.g. recently, target price recommendation of the LOTOS company PLN 0,0 caused a sudden drop in its price, although there were no objective reasons for that to happen. Similarly, Steve Jobs had for a long time been saying "we are not going to enter the video market", thereby dulling the vigilance of the competition for several years, only for him to later present an i-pod with a video feature. Currently, a new category of information product has appeared in the market: "information about information" (meta-information product). Examples of such a commodity are: rating opinions. *Moody's Investors Services*, a rating agency, earned USD 2806m between 2003 and 2007 by giving "opinions". Financial markets are dependent on the work of rating agencies. Only a month before its bankruptcy, Lehman Brothers bank enjoyed an opinion that did not indicate any problems with settlement of liabilities. AIG was among the safest companies in the world in terms of solvency, with a rating at the highest level AA in September 2008. When the agencies suddenly started to lower the ratings of the American insurer, they dragged it down into even more trouble. The EC holds rating agencies partly responsible for the current crisis in global financial markets, and this is how they've justified the need to take legislative action. There are over 40 laws based on credit ratings which, according to other regulations, currently can only be provided by 10 accredited entities. The European market is tied to the agencies through a directive on capital requirements. According to this directive, the assessment of credit worthiness can be used when the weight of risk pertaining to banks' investments is established.

The paradox of meta-information is that "the tail starts to wag the dog", i.e. activities in the real world are subordinated to meta-information. An example of this is artificial maintaining of AAA rating for the USA whose debt is around 12 trillion dollars and might even reach 14 if the Democrats' plans succeed in Congress. The point is that lowering the rating (i.e. – attention – creating and publishing reliable information!) suits neither the USA government (increase in debt servicing caused by the increase in debt service costs), nor financial markets in the world.

„Option acceleration“

„Option acceleration“ – describes a situation when a behaviour strategy is changed as the result of acquiring new information. The information which was originally supposed to optimize actions within the framework of the original strategy is not at all used for this purpose. The new information isn't used to fulfil the mission's objectives – more frequently it is used to REDEFINE THE MISSION'S OBJECTIVES. The perception of the value of information becomes changed.

Available IT solutions currently cause increasing dependency on ICT among managerial staff. In theory, IT should provide a multiplier effect ($P * IT$ – strengthening efficiency). Practice proves that managing a company equipped with advanced IT solutions without proper training leads to the same results as those from an average driver behind the wheel of an 800-horse power Formula 1 car. Experience shows that IT may weaken the organization's performance (P/IT). We do not yet know why it happens this way, but these are the experiences of some companies. Great benefits that are brought about by big investments in IT should be assessed MERELY in the context of enormous costs. A precise formula for the IT sector has not yet been developed so far:

costs/benefits

It has, however, been established that highest class IT infrastructure strengthens – not weakens – pathologies connected with decision-making. Those that managed investment funds before the crisis "knew" about speculative bubbles but they invested anyway. Having "the right information" at the right time does not lead to making "the right decisions". The experiences of the USA army show that more transparency on the battlefield does not guarantee greater military performance. Even if the most intelligent decision-makers receive the highest grade information, they will always make sub-optimal decisions. The problem is that growth in the supply of information causes changes in the behaviour of organizations and individual employees. Many of those behaviours will be, from a rational point of view, inefficient. Organizations must learn to act in conditions of OVERLOAD, and not DEFICIT (of information). Information available in excess is wasted as much as any other economic resource: organizations have a tendency to waste resources which are in abundance. **Conclusion:** information that is better, cheaper and supplied quicker is wasted (just like bullets in a battlefield when they are in abundance). Boosting the supply of information in a company causes new problems. The new information must now be analysed, the costs of coordination between departments increases, and more conflicts appear.

In business education in the 21st century new elements resulting from the nature of the present-day economy must be introduced to the curricula. This also means abandoning or marginalizing certain standard models of market description, such as marketing-mix. Cooperating with a competition element has a greater significance than ever before in the network economy (*co-opetition*) - as a result, the Porter's five forces model also becomes inadequate to describe a company's position in the market. Modern businesses operate in a number of markets simultaneously and compete:

- for talents in the global labour market
- in the fields of creativity and innovation

- in the field of establishing market standards (and this means that in the end there is only one winner and there is no possibility of “market division” between several key players).²

As a result of this, strategic management is based less and less on predicting the future, and more and more on shaping it.

In light of the above-mentioned arguments, it’s worth considering what business education should look like in the coming years. First of all, a review of curricula must be carried out in order to eliminate tools and concepts which are by nature inadequate to a modern market. Among such concepts, which deserve to be marginalized or eliminated from business education, the concept of marketing-mix is worth mentioning. Moreover, many ideas on quality management that were developed in the second half of the 20th century have now become outdated. For instance, the concept “customer’s satisfaction is inappropriate in the case of innovative businesses that have to supply solutions which the customer has not yet become familiar with”. More and more goods and services in the market are recognized as experience goods. Satisfaction assumes a certain parameterized predictability of a result, but after all, the unique experience which creates customer value is by nature impossible to programme. Modern business education should take account of the fact that competing in the market currently happens in a multidimensional system – the same company can be a rival in one market, and an ally in another. 20th century style thinking about management obviously originates from the experiences of American companies and is deeply rooted in American culture. In the 21st century, it’s Asian economies that become increasingly important players in the market. Why not then, instead of promoting American individualism and protestant values relating to the responsibility of an individual for their own existence, focus our attention on the values that are important in Chinese or Hindu cultures?

The review of curricula should not be limited to outdated concepts. It is equally important to include new elements, and, among others, the following must be mentioned:

1.Introduction of simulation games and case studies in which many correct solutions can be found, i.e. in which success and defeat criteria are fluid. A modern market is unpredictable and relative. Changes happen in a non-linear fashion and the rules change during the game.

2.Teaching the skill of asking the right questions – the educational process here is not based on an assessment of the quality of an answer to a presented fragment of reality, but on the quality assessment of the questions asked by class participants. The idea is that the same information can be interpreted in a variety of ways. Due to this, an analysis of the process of asking questions, as well as work on its improvement are the keys to transforming information into knowledge (see: table 1).

3.Ability to handle info-stress – special simulation programmes combined with drama elements can create, in laboratory conditions, situations in which a student can experience the effect of information overload. Information overload affects the quality of decision-making, therefore, the ability to deal with this phenomenon is of great significance for management efficiency.

4.Competing for talents – managers of present-day corporations should become familiar with conditions and circumstances in which the creative class representatives regard their company as an attractive workplace.

5.Management in conditions of full information – situations in which the person managing a company does not experience

information deficit should be presented in simulation games and case studies – the challenge is to choose the right information and ignore rest.

Table 1. Management factors in conditions of information deficit and overload

	Management with information deficit	Management with information overload
Metaphor	„Fog”	„Full visibility”
Dream of the organization’s leader	To see more	To see what’s most important
Strategic challenge	How to get more information?	How to get and identify key information?
Operational action	Acquiring more information	Filtering information, assessing information, transforming information into knowledge
Action mode	Searching for an answer	Asking questions (<i>quizzics</i>) ³
Key competences	Intelligence, discipline	Creativity, tolerance for ambiguity, coherent value system

Source: own work.

References:

1. *Leveraging Corporate Knowledge*, Edit. Edward Truch, Gower 2005.
2. Michael Schrage, *Perfect Information and Perverse Incentives: Costs and Consequences of Transformation and Transparency*, May 2003 SSP Working Paper
3. Ph. Kotler, G.S. Carpenter, L. Lodish, *Tajniki marketingu*, K.E. Liber, Warszawa, p. 356 – 361.

² In 2006 Toshiba announced that they quit promoting and supporting their HD-DVD standard, in effect giving the field to the rival standard Blu-Ray by Sony. Toshiba had invested USD 600m into promoting their standard.

³ J. Fazlagić, *Sztuka zadawania pytań – Quizzics*, CEO, 7--8/2008, p. 34-37.

