Mass Customization and Multiple Intelligence

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Abstract
If the past millennium has led to more democracy, it is expected, that the new that has just started will lead to more amplified individualization. The trend to individualization is the basis on which Mass customization is founded and a keyelement in Gardners Multiple Intelligence Theory, which has powerful implications for the education sector and for the workplace. This paper discusses the influence of Gardner´s MI-Theory on the four level of mass customization.

Keywords: Individualization, Mass Customization, Personalization, Multiple Intelligence Theory, Learning Process, Knowledge Management

1. Introduction

The growth of IT and related developments in the recent past have turned the world into global marketplace. Gradually, national and regional economies are transforming into a single global economy (…). Globalization has given birth to intense international competition to expand trade and commerce and a desire on the part of every country to capture as much of the global consumer market as possible. All this demands superior skills of production, distribution and communication as never seen before in the history of human race. New skills are being demanded today, necissitated by competitive participation in the new economic world order (Mishra 2002, p. 3).

Decisions – in particular those of local and national enterprises – come under the influence of global possibilities and competition. What is involved here is a paradigm shift from territorial production, which was oriented towards a local or national market, to de-territorialized forms of production, which are oriented towards several national markets or the world market. The market has become transnational and not (only) the companies. Consequently this globalization of trade is not restricted to flows of goods and capital, but includes the *globalization of decision-making frames*. And this shift is also taking place within businesses. The result is that a whole statistical view of the world, based on national economies and the international exchange between them, is becoming meaningless or at least losing its value as information. 'International' trade, as recorded by economic research, is being transformed into '*intra*-firm trade', in which nothing is bought or sold, but, rather, products are pushed back and forth within a 'firm' operating transnationally. According to estimates, between 40 and 60 percent of so-called 'international trade' is now 'intra-firm non-trade'. There are as yet no precise statistics. Thus the economists, and not only the social scientists, are counting the wrong peas with great institutional enthusiasm (Beck 2002, p. 16).

If the past millenium has led to more democracy, it is expected, that the new that has just started will lead to more amplified individualization (Gardner 2002, p. 260).

Ulrich Beck makes the rising number hard choices individuals face the centerpiece of his analysis. His *Risk Society* provides a compelling articulation of the impact of systemic process of "individualization" on the subjective experiences of individuals. Like "individualism," "individualization" is a broad-reaching term that refers, primarily, to a process in which an increasing differentiation of possible life-paths is combined with an expansion of the number of instances in which individual have to make decisions. This growing complexity of society means that more individuals are making more choices among a wider array of options. This is not necessarily to say that everyone can do as she or he pleases, nor that these choices are being freely and autonomously made. Beck's point is rather that society is increasingly becoming structured in such a way that individual decision-making is becoming not only more possible, but also more required. Thus, central to Beck's individualization thesis is the claim that individuals in Germany (and similar societies) have a larger field of choice than they have previously had. To support this claim, he points to numerous developments, which can be summed up in three categories: (a) a decline of traditional determinations of life-plans, (b) an expansion in the diversity of jobs, consumer items, lifestyles, and forms of social organization, and (c) an increase in educational opportunities and living standards (Anderson 2001).

The trend to individualization with its social and economical dimensions is a precondition for the new business model *Mass Customization*.

2. Mass Customization and Personalization

The idea of mass customization is based on the observation that there is a customer interest in products that are adapted to his/her individual needs and preferences, since the adaptation will increase perceived performance. As the standard of living has increased in the last 50 years, individualization has received increased focus, since customization has come within reach of the average consumer. At the same time there has been a massive development of technologies (Svenson and Jensen 2001, p. 1).

In this environment customers have the power to demand individually tailored products that are specifically designed and manufactured to suit their needs.

The new competition is a major upheaval that is affecting every aspect of how companies organize and operate. The required shift in thinking is so great – and the danger of not making the transition is so serious – that the National Research Council commissioned a study to articulate the problem and help prepare american manufacturers to meet the challenge. Their conclusion was that we are in the midst of a fundamental revolution in the nature of business, one that, in their words, "has the potential to alter the manufacturing landscape as dramatically as the industrial revolution" (Taylor 2004, p. 18).

The companies that respond properly to these changes are now exploring and beginning to master yet another frontier in business competition, one whose terrain is decidedly different from that of Mass Production (…). They have found, that customers can no longer lumped together in a huge homogeneous market, bit individuals whose individual wants and needs can be ascertained and fulfilled (…). Leading companies have created process for low-cost, volume production of great variety, and even for individually customized goods or services. They have discovered the new frontier in business competition: Mass Customization (Pine 1993, pp. 6-7).

The concept of mass customization was first identified in "Future shock" by Toffler (1971) and was later described in "Future perfect" by Davis (1987).

Stan Davis, who coined the phrase in 1987, refers to mass customization when "the same large number of customers can be reached as in mass markets of the industrial economy, and simultaneously they can be treated individually as in the customized markets of pre-industrial economies" (Davis 1987, p. 169). In order to address the implementation issues of mass customization, Tseng and Jiao (2001) provide a working definition of mass customization that is very useful. The objective of mass customization is "to deliver goods and services that meet individual customers´ needs with near mass production efficiency" (Piller 2003).

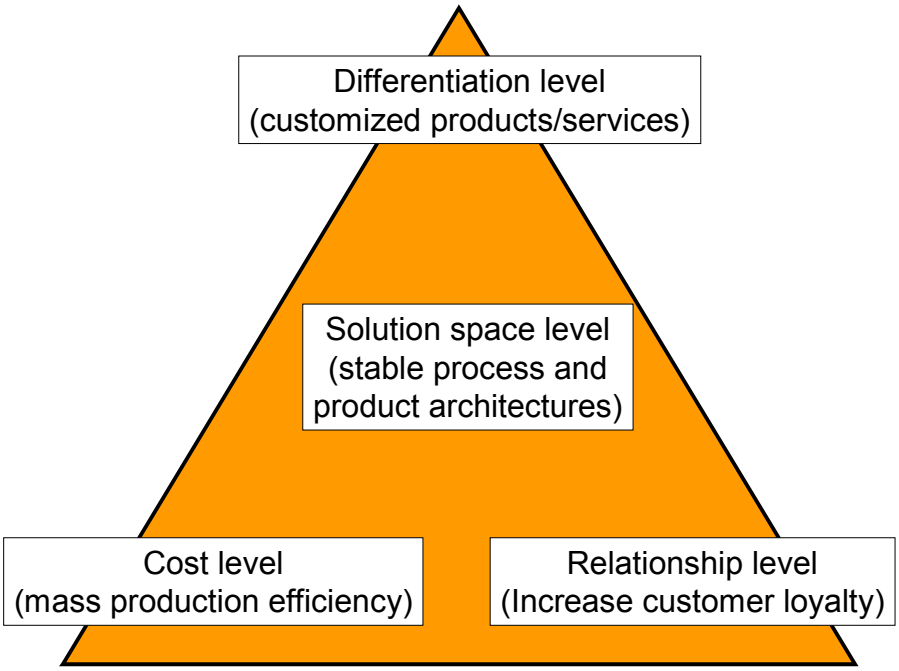

Figure 1: The four levels of mass customization (Piller and Stotko 2003, p. 61)

Doing so, mass customization is performed on four levels (Figure 1). While the differentiation level of mass customization is based on the additional utility (value) customers gain from a product or service that corresponds better to their needs, the cost level demands that this can be done at total costs that will not lead to such a price increase that the customization process implies a switch of market segments. The information collected in the course of individualization serves to build up a lasting individual relationship with each customer and, thus, to increase customer loyalty (relationship level). While the first three levels have a customer centric perspective, a fourth level takes an internal view and relates to the fulfillment system of a mass customizing firm: Mass customization operations are performed in a fixed solution space that represents (Piller 2003) "the pre-existing capability and degrees of freedom built into a given manufacturer's production system" (von Hippel 2001).

Customized products might be a differentiator now, but what happens when every company can make customized clothing, customized bags, etc.? What happens when customized products become a commodity? How will you differentiate? Mass customizers need to be at once product-centric and user-focused (Aaronson 2003).

Personalization should therefore be clearly distinguished from customization. Both *customization* and *personalization* are based on the assumption that a homogeneous offering is not sufficient in meeting the customers needs (…). As defined by the Webster dictionary (2003), personalize means "to make something personal or individual; specifically: to mark as the property of a particular person" (Fung et. al. 2001, p. 2).

The definitions of *mass customization* and of *personalization* implies that the goal is to detect customers needs and then to fulfill these needs with an efficiency that almost equals that of mass production.

If the trend to individuality or to individualization is a precondition for Mass Customization and Personalization, then entrepreneurs should know the individual (e.g. the customer) or their personality structure. That means, the conception of the customer can be based on other interpretation of information because he or she judges with another type of intelligence.

3. Howard Gardners Multiple Intelligence Theory

3.1 Introduction

The traditional view of intelligence can be traced to French psychologist Alfred Binet. At the request of the French Ministry of Education in the early 1900s, Binet and his colleague Theodore Simon developed a test that identified children at risk for school failure. The test was effective for that purpose. However it was soon used as the basis for the psychometric measurement of individuals' general capabilities or intelligence. Since that time, intelligence tests have been heavily weighted toward the types of highly predictive abilities Binet measured in his test, including: verbal memory, verbal reasoning, numerical reasoning, and appreciation of logical sequences. And intelligence tests have defined how we define intelligence (Project AMI 2000).

Intelligence is the biological potential to process information in certain ways that can be activated in a cultural setting to solve problems or make products that are valuable in a culture (Harvard Graduate School of Education 2003).

Gardner's recently refined definition suggests that intelligence represents potential that will or will not be brought to bear depending on the values, available opportunities, as well as personal decisions made by individuals, of a particular culture (Gardner 1999, p. 34).

Gardner's definition located intelligence in what people can do and the products they create *in the real world*, in contrast to the implied intelligence enumerated through a test. It suggests a qualitative expression, a description, of an individual's collection of intelligences rather than a quantitative expression of a unitary ability (Project AMI 2000).

As human beings we have many different ways of representing meaning, many kinds of intelligence. Since the beginning of the last century, psychologists have spoken about a single intelligence that can be measured by an IQ test; Howard Gardners´ research however has defined 8 human intelligences: Verbal/Linguistic Intelligence, Logical/Mathematical Intelligence, Musical/Rhythmic Intelligence, Bodily/Kinestetic Intelligence, Visual/Spatial Intelligence, Intrapersonal Intelligence, Interpersonal Intelligence, Naturalistic Intelligence.

The criteria have served well as the principal means to identify a set of intelligences that captures a reasonably complete range of abilities that are valued by human cultures. By keeping the criteria in active use, MI Theory can and has been modified to reflect our increasing understanding of the ways in which people are intelligent. MI Theory offers the most accurate description to date of intelligence in the real world, and it continues to be a helpful articulation and organization of human abilities. Two distinguishing features of MI Theory set it apart from conventional wisdom. The first is MI's definition of intelligence, which locates intelligence in real world problem-solving and product-making. In contrast to the "implied" view of IQ intelligence, MI is based on an understanding of how people's intelligences really operate. The second feature is that there exists a plurality of intelligences, each with distinct symbol systems and ways of knowing and processing information (Project AMI 2000).

We all possess these several intelligences, but no two of us - not even identical twins - possess the same profile of intelligences at the same moment. In most countries throughout history, e.g. school has focused almost exclusively on language and logic (Gardner 2001).

Howard Gardner's work in multiple intelligence theory has powerful implications for the education sector and for the workplace.

3.2 Multiple Intelligence – Implications for the education sector

The educational model in use today in high schools was actually designed in 1892. To put this another way, while the real world has changed a lot in that last hundred years, the subject matter has not changed at all. Education should be about preparation for living in today´s world. That should mean gaining job skills, personal skills, and mental skills (Shank 2002, p. 8).

" … we transformed education into mass production at around the time we invented mass production of industrial goods. Perhaps at the time, it was sufficient to learn the three "Rs" in order to lead a useful life, perhaps it was just the mass number of people that had to pass through the educational mill. In any case, when we democratized learning, we lost something as well as gained quite a lot. … The problem is that we now require more than basics in order to function in society. The jobs are more intellectually challenging, and the terrain is shifting too rapidly. You won't work in the same job for a lifetime almost no matter what you do. … We have the technologies to expedite individuality again. The real question is whether we can transform the teaching environment from factory work to tutoring. That is a complicated social and personal issue." (Lippman 2002)

Some authors (Hutzschenreuter 2002; Freund and Piotrowski 2003; Piller 2002; Schickedanz 2002) pointed out, Mass Customization and Personalization can help to overcome the efficiency-paradox of developing and delivering (management) education.

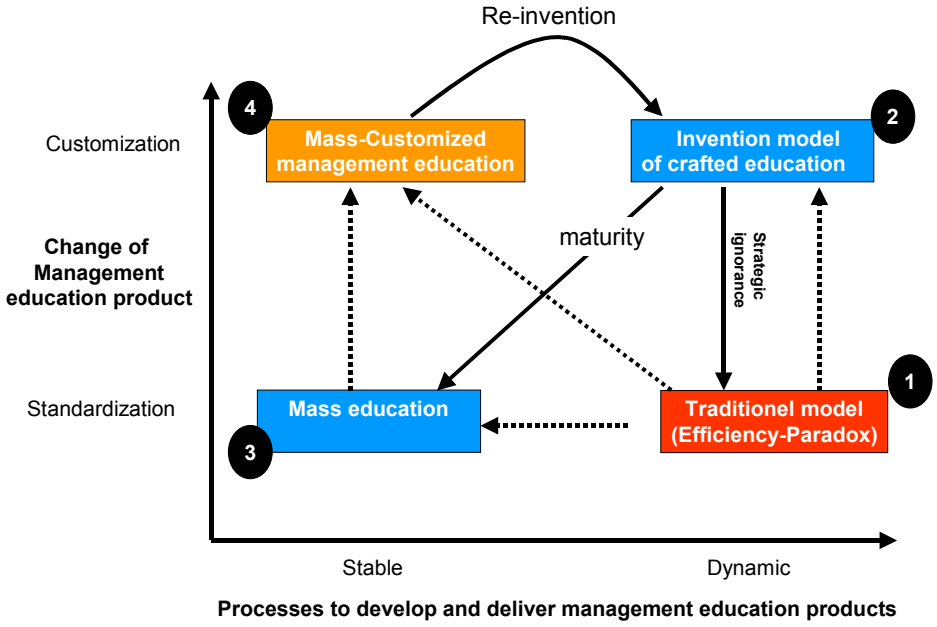

Figure 2: Product-process matrix of supplying management education (Piller 2002)

As shown in the Figure 2, education products can either be (Piller 2002):

- standardized products with slow, evolutionary, predictable changes (Field 3 – mass education: Today's "E-Learning" and virtual education providers are moving towards this model)
- or customized solutions fitting the needs and desires of each single customer resulting in a different product every time one is produced (Field 2 – invention model of crafted education)
- Mass customized management education (Field 4)*:* The concept of mass customization may provide a solution to overcome the efficiencies of the described models and shows an alternative escape from the paradox. It moves one's thinking beyond costly customization on the one hand and pure standardization of education on the other towards the concept of hybrid competitive strategies

The question is, *how* the education market can benefit from this hybrid strategy. Many solutions are technology driven, but from the customers´ point of view, education looks different.

The customization of learning products is possible throughout the different steps of the value chain of an education vendor and can address all distinguished dimensions in which learning processes differ (Hutzschenreuter 2002).

Achieving economies of scale is partly possible by incorporating reusable learning objects. Learning objects can be arranged in a fixed order – like at static web page where the place where certain information appears is already predefined. However mass customized learning products will require that the learning objects like text, graphic, diagrams, audio/video, interactive tools, etc. will be put together in real time in order which will depend on the person needs and preferences. Human being would not be able to do this on a large scale, therefore a software (configurator) must be used. The recent progress of information technology makes it possible, however a strong attention must be drawn on methodologies used.

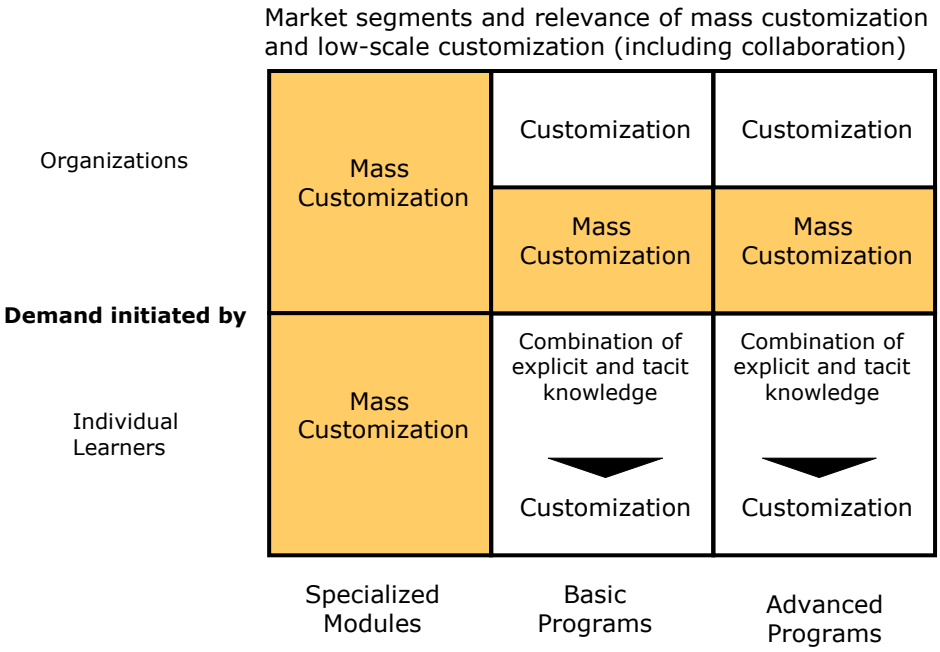

Figure 3: Market segments and relevance of mass customization and low-scale customization (including collaboration) of management education (Hutzschenreuter 2002)

Moreover one problem can not be solved by technology: Learning products can not be mass customized in regard to collaboration. A decreased level of social interaction and therefore limited flow of tacit knowledge may result. This problem cannot be tackled, because real-life social interaction is unique in its nature (Hutzschenreuter 2002).

Some reasons, why E-Learning initiatives fail:

- Mueller (2001) headlined that “E-Learning initiatives fail in the employees´ point of view”. One important reason is the lack of personalization
- Further aspects why E-Learning initiatives fail are collaboration and interactivity (Hutzschenreuter 2002)
- According to a study by the Initiative D21, E-Learning is not learner oriented so far (Initiative D21 2002**)**

It makes sense to take personality differences into account when designing a system (Schank 2002) .

It seems trite to point out that objects themselves cannot learn. But this lies at the heart of the pedagogic issue. Subject and object are inverted. What are called learning objects are in fact the subject of learning. So what should be – or could be – a learning object ? (…) this is the outcomes of learning, the knowledge created, at all its different stages and in all its different forms. Learning objects are not created by course or materials developers, or even by learning facilitators but by the learner themselves. The primary role of the computer based learning platform is not in the delivery of the materials but in facilitating the transformation and communication of ideas as knowledge. The reusability of learning objects is in recording and storing that knowledge and in re-communicating and re-transforming the experience and practice of learners and participants in both an individual and group context. In other words, the computer or ICT based learning environment is a process tool to support the creation and transformation of knowledge through learning objects (Attwell and Malloch 2002).

[…] everyone exhibits a combination of the various intelligences. The goal is to engage as many of these different capacities as possible within the same learning event or program.[…] For example, in a project management course, you could use a small group discussion followed by a visual activity such as a collaborative flow chart. Later, you could bring the entire class to a Website to explore project management principles and resources. Build a library of learning activities. As you begin to deploy your virtual classroom, you will build a curriculum of learning programs that you have designed specifically for this environment. In addition to leveraging reusable learning objects, be sure to *build a* database of reusable learning events and activities. This approach will save you time as your virtual classroom curriculum continues to grow (Meacham 2003).

As we know, learning is dependent on the use and application of information – in how information is contextualized to become knowledge. Today and in the near future, context will be more important than content. The user is king and context rules (Levy 2003).

Context is the holy grail for e-Learning because context varies not only from learner to learner and company to company, but also from day to day. […] When individuals apply new knowledge in real time then content and context compliment each other to provide the strongest knowledge bridge, one that will support the learner when the pace is fast and time to task is short. This dual focus on excellent content and timely context is […] one of our great strengths (Levy 2002).

In the new paradigm, learning should be individualized, localized, and globalized with aims to create unlimited opportunities for students' life long learning and for development of their *contextualized multiple intelligence* (CMI). Student is the center of education. Students' learning should be facilitated to meet their needs and personal characteristics, and develop their potentials particularly CMI in an optimal way. Students can be self- motivated and self- learning with appropriate guidance and facilitation, and learning is a self-actualizing, discovering, experiencing, and reflecting process (Cheng 2002).

Howard Gardner's work around multiple intelligences has had a profound impact on thinking and practice in education - especially in the United States (Project AMI 2000, Project SUMIT 2000, Project Zero 2003) but also in Korea (Moon 2001), China (Cheng 2002, Cheng 2003) and Europe (Freund and Piotrowski 2003).

"Multiple intelligences" should not in and of itself be an educational goal. Educational goals need to reflect one's own values, and these can never come simply or directly from a scientific theory. Once one reflects on one's educational values and states one's educational goals, however, then the putative existence of our multiple intelligences can prove very helpful. And, in particular, if one's educational goals encompass disciplinary understanding, then it is possible to mobilize our several intelligences to help achieve that lofty goal (Gardner 2003, p. 9).

The sustainable model of learning requires re-centering our attention on the consumer of knowledge, on the individual learner or so-called knowledge worker. In the emerging model, the user is king, and context rules! A winning model will focus on personalized employee-driven learning to help knowledge workers to decrease time to performance and increase productivity. The new model turns the controls over to the learner (Levy 2003).

3.3 Multiple Intelligence - Implications for the workplace

The landscape of knowledge acquisition and knowledge use is changing. To understand where it is all ahead, it is important to differentiate between the academic model and the performance model. Academic programs – classes, courses, exams – may be useful when the main goal is knowledge (intellectual achievement) as an end in itself. But in the workplace it is performance that matters, and more than ever before performance must be executed in an environment where individuals, teams, and business units must learn, adapt, and excel in real time in the face of constant change. In the workplace, knowledge is no longer an end in itself; it is a means to itself (…). This requires a system that identifies context through an unchanging taxonomy linked to ever-changing personal profiles and performance objectives (…). Here the old rules change. Context trumps content, and less is more (Levy 2004).

Educators across the United States, in Europe, Australia, South America, Asia, and Africa have repeatedly demonstrated the benefit of using Gardner´s theory to identify and mobilize knowledge. However, industry and the professions have been less eager to apply the theory and recognize similar benefits. One reason for this has been the lack of demonstrated correlation between the general intelligences identified by Gardner and the specific practices in professions.

Intelligence	Occupation
Verbal / Linguistic	Archivist, attorney, author, call center operator, comedian , copywriter…
Logical / Mathematical	Accountant, actuary, analyst, astronomer, auditor, banker, biologist, bookkeeper …
Musical / Rhythmic	audio-video technician, band member, choir or choral director, choreographer, conductor …
Bodily / Kinestetic	Acrobat, actor, actress, aerobics instructor, architect, artistic painter, assembler …
Visual / Spatial	Advertiser, architect, artist, builder, carpenter, cartographer, chess player …
Interpersonal	Administrator, anthropologist, bartender, businessperson, chess player …
Intrapersonal	Politician, psychiatrist, receptionist, salesperson, self employed person …
Naturalistic	Agricultural engineer/worker, astronomer, beachcomber, biologist, botanist …

Table 1: Lists of just some general occupations that need Gardner's Intelligences (Morris 2004)

Almost every occupation (…) consists of a variety of responsibilities that touch on several of the intelligences. Restated in another way, various and different talents, skills, or to cite Gardner, intelligences are required for each occupation. What this means is that it is important to develop and nurture all of your various intelligences (Morris 2004).

The concentration on sectors makes possible the implementation of the MI Theory in the companies. (…). The sectors finance, accounting or physical sciences are based upon logical-mathematical intelligence, for sectors that are human persons oriented the personal intelligence is important. Also the other types of intelligence will be used, for example: the musical and other art intelligencees will be used in the Entertainment Industry, the body and kinesthetic intelligence in the sectors of Sports and Art, the visual intelligence in the Shipping, Transport, Promotion and Graphic design, the naturalistic intelligence in companies that deal with ecology, the environment, plants, animals textile and ecology, the intrapersonal intelligence in the career planning and self experience…. (Gardner 2002, p. 233).

Martin (2001) turned Howard Gardner´s theory of multiple intelligence into user-friendly tools. Her work provides a complete system for examining staff needs, matching applicants to jobs, and supervising and training effectively. The results allow the identification of individual skills and uncovering the mosaic of skills needed for multi-skilling, multi-tasking and efficient teamwork.

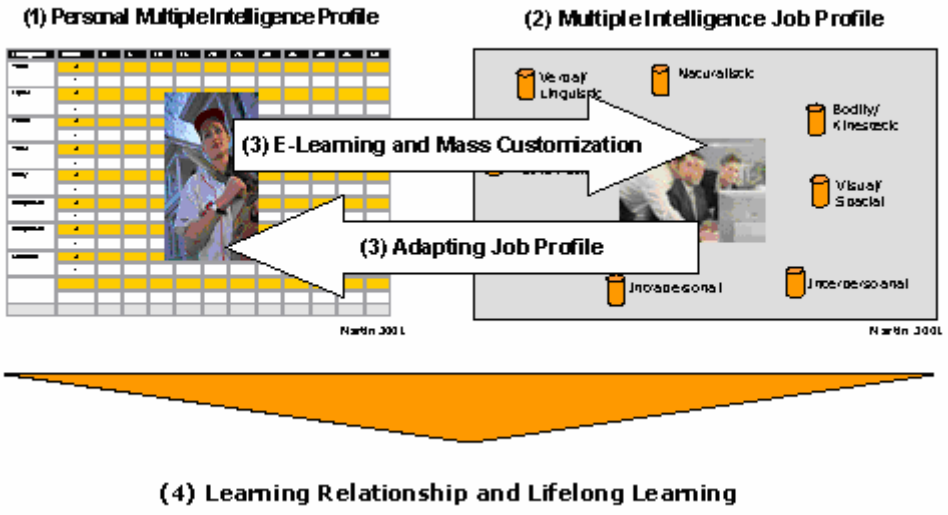

Figure 4: Personal Multiple Intelligence Profile, Multiple Intelligence Job Profile, E-Learning and Mass Customization, Learning Relationship and Lifelong Learning (Source: Freund and Piotrowski 2003)

Evaluating Jobs from the MI-Point-of-View is really exciting, because many traditional job-profiles do not characterize the “real” job. The use of multiple intelligence in the workplace will increase creativity and productivity by enabling workers to use their strengths (Freund and Piotrowski 2003).

More than 80% of British workers lack any real commitment to their jobs, and a quarter of those are "actively disengaged," or truly disaffected with their workplaces. These are among the troubling findings of The Gallup Organization’s Employee Engagement Index survey, which examines employee engagement levels in several countries, including Great Britain (…). Why are so many British employees disengaged? Poor management is the problem, according to the Employee Engagement Index survey. Workers say they don’t know what is expected of them, *their managers don’t care about them as people*, *their jobs aren’t a good fit for their talents*, and *their views count for little*. The survey also found that employees feel they are far more productive if their supervisor *focuses on their strengths and positive characteristics rather than their weaknesses* (Flade 2003; Christiani and Scheelen, p.26).

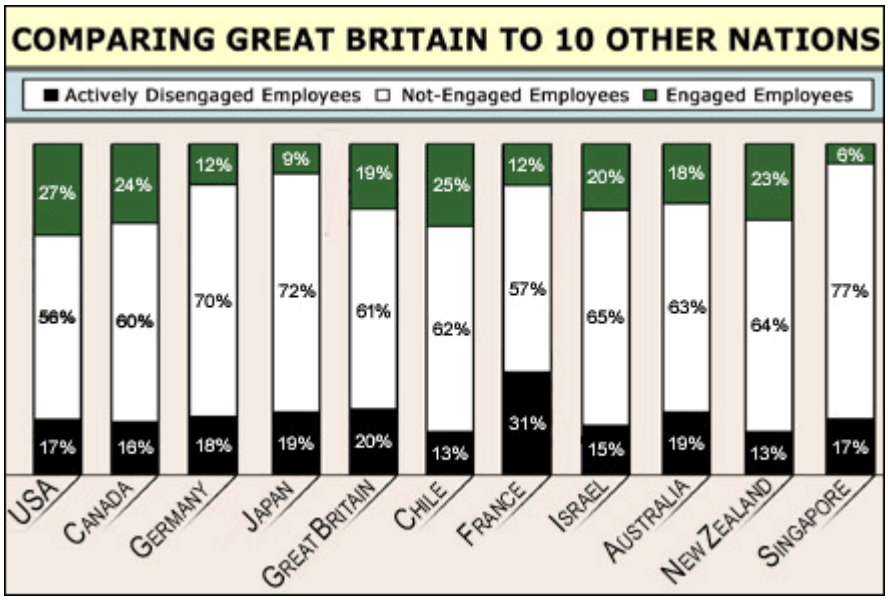

Figure 5: Employee engagement levels in different countries (Source: Flade 2003)

These thoughts lead to the question: How could the four levels of Mass Customization gain from the MI Theory ?

4. Mass Customization and Multiple Intelligence

4.1 Multiple Intelligence and Differentiation level

It´s the customer who determines what a business is (Drucker 1954).

To know the customer from the MI point of view enables the entrepreneur, to achieve a better fit of the performance characteristics to the individual “ideal point”. In this way a supplier of products or services gains a differentiation advantage towards the competition.

To the mostly cited sentence in business life belongs the expression: “The customer has always right“. To this sentence belongs also the end: “The customer has always right with what he or she feels about the product or the service”. That means, the conception of the customer can be based on other interpretation of information because he or she judges with another type of intelligence. Therefore is a product the best in the world or simply not. But this is not the question. Important ist, whether the customer demand on quality and service can satisfied. Also a customer, that can acquire a product for half the price (mathematical criterion) can be disappointed because, the operating instructions or the contract are unclear (linguistic intelligence), because the design insults the view (visual intelligence) or because the product is too loud (audio criterion) etc. According to Gardner´s Theory, systems can be developed, with which not only product and service, but also the customer satisfaction can be measured by the use of similar criteria, as these that can be found on questionnaires designed to be used for measuring employee satisfaction on communication and further education (Martin 2001, p.288).

4.2 Multiple Intelligence and Cost level

The question is to decrease costs or/and to increase intellectual capital.

The traditional balancing methods are mostly based on the theoretical hypotheses that are proved not to be applicable in the today's world of at least in this form. Businesses are evaluated on the basis of double book keeping, which are based on asset types as machines and work like many decades ago and therefore they measure only the "touchable" and scarce business resources. But Intellectual capital exhibit totally other characteristics than the traditional production resource factors (Schäfer 2001, p. 6).

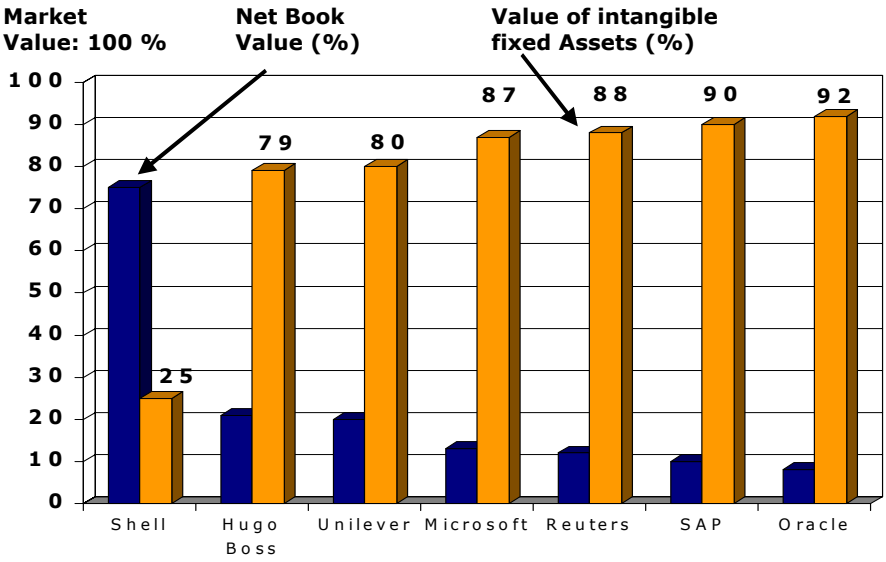

Figure 6: Share of intangible assets in the market (Source: Helin 2001, p. 247)

Gardner's Multiple Intelligence theory can become one of the most difficult problems to solve, that means the question of the management of intellectual capital (Martin 2001, p 75).

Therefore for the future the question is which contribution can make different activities for the increase of intellectual capital in businesses. The multiple intelligence theory supports all levels of Mass Customization and therefore contributes in this way to human capital, organization capital and relationship capital.

4.3 Multiple Intelligence and Relationship level

Modern organizations, even very small local once, must compete for custom. Gaining and, crucially, retaining customers requires a knowledge of needs and wants of the customer (…). The ability to relate to customers is a key attribute (…). However demanding they may be they are the source of revenue and success – no entrepreneur can do without them (Cartwright 2002, pp. 50-51).

Enlist their power on your behalf. That means a shift of focus from selling to learning. Customer Relationship Management as it´s usually practices doesn´t do that, as C. H. Prahlad observes: "Most CRM strategies view customers as outside, static entities; The goal is to obtain a 360-degree view of each customer – hence, the need to automate and integrate various customer interface touchpoints …. It´s a company-centric view of the customer, with a focus on efficiency gains" (…) But it´s just one blade of the scissor. Customer learning cuts with two blades. It allows customer to invest their capital [relationship capital] in you. (Stewart 2001, p. 194).

Especially in the reduction to the twos relationship between buyer and seller is based the intelligence deficit (the stupidity) of markets. But high complex flows and communication patterns cannot be reduced or synthesized in simple twos or threes relationships (Virtual) (Simon 2004, p. 166).

Knowledge management was the darling of the Information Age. But social networks are the focus of a new age, the Age of Connection (Kaplan-Leiserson 2003).

Perhaps just as interesting as the way that social software is transforming group interaction — across different time zones or in the same room — social software is destined to have a huge impact on how businesses get at their markets. So the essential elements of social software will be incorporated into more conventional software solutions, changing the way collaboration and communication is managed within and across businesses, and ultimately transforming how companies sell and interact with customers (Boyd 2003).

The Multiple Intelligence Theory can give important hints in the framework of customer individual learning processes (Learning Relationship), as to how these learning processes should be formed. Furthermore, insights can be gained, as to how the customer relationship should be formed, so that relationship capital can be built.

4.4 Multiple Intelligence and Solutionspace level

The solution space level takes an internal view:

The critical success potential in organizations is not technology but people. The insight, that the economic aspect should be bared and moved by the social must be realised (Bleicher 1992, p. 31).

A survey by Duray (2003, p. 8) adresses the softer managerial issues of mass customization: “Many mass customization researchers discuss flexible manufacturing technologies as critical to enable a mass customization capability (…). This study finds that worker flexibility is critical to the financial success of mass customizers. Three items found to have significant differences across the performance groups relate to worker flexibility: 1) Direct labor competence is high, 2) direct labor is trained to perform multiple tasks in the production process, and 3) plant employees are rewarded for learning new skills. If employees are competent, trained for multiple tasks, and rewarded for new skills, this reflects an organization that encourages worker flexibility. Mass customized products require customer involvement in the product design, thereby creating unique products. In this customized environment, it is not surprising to find the worker flexibility is important to the financial success of mass customizers”.

With the help of the Multiple Intelligence Theory, better company learning and transformation processes can be built and the potential of the co-workers can be better acquired. In this way a more substantial contribution to the economical success can be made.

5. Conclusion

In this paper first the social and economical dimensions of the individualization were shown. Because the trend towards individualization is the basis for Mass Customization and the Multiple Intelligence Theory of Gardner, an effort has been made to answer the question, whether Mass Customisation can benefit from the insights of the Multiple Intelligence Theory. It should be demonstrated, that the insights gained from the Multiple Intelligence Theory could contribute to a more successful implementation of Mass Customization in the education sector. The use of Multiple Intelligence Theory in the economy will be in principal recognized in recent years. Mass Customization and Personalization puts high requirements at the companies, the organization, the co-workers and the technology. In order to have success with Mass Customization, it is not enough to only master the technological side of the change process. The Multiple Intelligence Theory of Howard Garner has been already successfully used in many sectors. As this paper in first considerations has shown, also Mass Customization can gain from it.

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All links have been checked and up-to-date on 18.04.2004.

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