

# Management Education in a Globalizing World: The Use of Simulations

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## ABSTRACT

Globalization impacts all firms and institutions operating in a marketplace, where cross-border and cross-continental interactions are increasingly commonplace. Through their continuous expansion into various countries around the world, multinational companies play an important role in shaping our increasingly global market. In response to these rapid changes and universal trends, many universities undertook the challenge of initiating attempts aiming to internationalize their curricula. In the current paper, we investigate operational steps to progress through this complex path and suggest a set of specific elements, with particular emphasis on simulations; business tools with the potential to provide invaluable support for the purposes of adequate market-need preparation, through participant exposure to global and cross-cultural issues within a classroom setting.

Our conclusions illustrate that institutions should plan these steps carefully, taking into account available staff, resources, and faculty expertise. Furthermore, we emphasize the need for experiential elements in order to achieve a more realistic and concrete understanding of the global world. Finally, we present evidence in support of the overall value and validity associated with business simulations. Using a price war example, we illustrate the embedded characteristics of simulations to produce outcomes similar to those expected and documented in real market settings.

**Keywords:** Management Education, Globalization, Business Simulation, Curriculum Internationalization, Price War.

## INTRODUCTION

We live in an increasingly global environment; national borders are not actual boundaries; the interdependence between domestic and international firms are escalating; many of us work on teams with members from diverse backgrounds, nationalities, and cultures; technological advancements enable us to partake in multinational

business conducts with ease and efficiency; and our employers expect increasing flexibility, through rewarding and desiring multicultural experience [2], [5], [6], [7].

In the current paper, we review the most typical operational steps associated with internationalization in curriculum composition and development in higher educational institutions. Beyond these building blocks, we discuss experiential elements, with specific attention to simulations, emphasizing the ability of these instructional tools to provide students with an environment appropriate for exploring global concepts, without having to necessarily enroll in a multi-university program. Finally, we briefly evaluate the overall value as well as the external validity associated with business simulations; using a well documented real world example: price war [1].

## CURRICULUM SHIFTS IN A GLOBALIZING WORLD

In response to the challenges posed by globalization, many educational institutions established strategic processes towards curriculum internationalization [2],[8]. Edwards and his colleagues (2003) argue that while generic goals for internationalizing the curriculum have been defined, the currently available literature provides limited guidance concerning the operational steps to be taken by institutions. In order to fill this gap and supplement the relevant available literature, they propose a 3-stage model (see Table 1).

TABLE 1. A typology of curriculum internationalization (adopted from Edwards et al., 2003)

Level	Description
Level 1 International Awareness	The curriculum is infused with international perspectives: students are made aware of cultural differences and adopt an increasingly international attitude.

Level 2 International Competence	Engagement with the specialist international dimension of the discipline: students are capable of performing their profession for international clients. At this level, students are prepared for certain challenges of the global world: e.g. those characterizing different marketplaces or different cultures.
Level 3 International Expertise	Students are immersed in an international study: they become global professionals, in their local environment as well as in multiple locations.

### **EDUCATIONAL METHODS TO SUPPORT INTERNATIONAL AWARENESS AND COMPETENCE**

Within the Edwards (2003) framework, the first two levels encompassing international awareness and competence tend to be the most accessible from the perspective of educational institutions, and consequently represent the most common practices. Achieving the third level of international expertise, while eminently beneficial to participants, does require the organization of student exchange programs and other globally immersive student experiences, involving the cooperation between academic and administrative units across institutions.

Based on a review of internationalization practices exercised by numerous higher educational institutions, as well as our own academic and professional experience associated with various instructional methods, the following approaches tend to be used most widely in order to enhance students' international awareness and competence [7].

- *International business elements within courses*: feature cross-cultural examples, global case studies or research assignments within already existing courses.
- *International business courses*: incorporate a limited number of specific cross-cultural / international business courses into the curriculum (e.g. cross-cultural communication).
- *Short-term visiting programs and study tours*: initiate short-term visiting programs and / or study tours hosted by one or more foreign universities.
- *International collaborative projects*: initiate projects and other forms of interaction between students with participants from other cultures, through collaboration with foreign universities and / or multinational companies.
- *Business simulations*: establish business simulation exercises, including role play, with particular emphasis on elements that highlight cultural differences. This tool can incorporate

interdisciplinary topics, and usually supports online collaboration of geographically dispersed groups and / or individuals.

As apparent from this review of common practices, general as well as specific elements and methods are incorporated by universities to varying extents in order to increase the global experience of their students; ranging from individual case studies and stand-alone cross-cultural courses to global projects and simulations.

For the purposes of the current paper, we focus exclusively on characteristics of the simulation approach. While other tools have notable advantages and valuable merits, management simulations may be superior in comparison due to their potential to engage students more intensely in realistic management problems. In the past, simulations have been criticized for their comparative simplicity relative to the real world. While this is unquestionably an inherent limitation, certain benefits associated with simulations should also be noted. More specifically, simulations tend to be dynamic, provide complex business scenarios that take place over time, induce elaborate decision-making processes, present consequences that reflect on participant decisions, as well as have the potential for the simultaneous inclusion of various business areas and disciplines.

A growing body of research supports the use of simulations as the preferred method over case teaching in general management. In addition, as online resources become increasingly accessible, online management simulations became more widespread as well [3],[9]. Finally, there is ample evidence suggesting that computer-based general management games are effective for teaching management concepts [4], [10].

### **RESEARCH METHODOLOGY**

In the current paper, we follow a partly descriptive and partly explanatory case study approach [11]. When aiming to characterize and evaluate business simulations, theoretical as well as operational aspects should be considered. On a theoretical level, Faria and Wellington (2005) highlight the following elements:

- Learning or skills training aspects;
- Relative merit of business simulations in comparison to other teaching approaches;
- External validity; and
- Internal validity.

On an operational level, business simulations should encompass all or most of the following steps:

- Participants are placed in teams and assume the role of decision-makers in organizations, along with the responsibilities associated with their position.
- The scope of decision may cover the entire firm or be restricted to a functional unit, depending on the focus of the simulation and / or the characteristics of the participants.

- The participants are provided with an initial starting point with respect to time, space and relevant environmental factors within which their firm is operating.
- The participants submit a set of decisions associated with their firm. Normally, each of these sets tends to represent the operation of the firm during a given quarter or an entire year.
- After processing the participants' or participating teams' decisions, results (such as balance sheets or competitor data) are returned. The participants are asked to prepare another set of decisions, taking into account the results of their previous decision and their consequently modified circumstances. The cyclical and longitudinal nature of this multi-decision process encourages and often forces students to carefully consider the anticipated consequences associated with their decisions.
- In order to emphasize the international awareness and competence skills, global-scale matters should be included either via the consideration and inclusion of different marketplaces, or via the use of multi-country organizations. In addition, culturally diverse groups are ideal and desirable, due to the added underlying society-level complexity, as well as the anticipation of further globally relevant matters arising in such workgroup settings.

Next, we turn to address one particular simulation exercise, in order to illustrate various aspects associated with simulations. First, using a descriptive case study approach, we evaluate globally relevant learning outcomes. Second, using an exploratory approach, we assess the external validity associated with this particular simulation exercise, via comparing the simulation outcomes with documented real world outcomes in a specific aspect characterizing global markets: namely through the exploration of price wars. In order to establish the appropriate background within the simulation environment, we create a price-sensitive, oligopolistic market with a product moving into commodity stage, and observe the behavior as well as document the results of the participating teams.

### THE SIMULATION TOOL

After examining a number of different simulation packages and using student surveys to solicit associated preferential input, we selected a turn-based, computerized management level business simulation. This computer-based solution was created by Cesim Ltd. ([www.cesim.com](http://www.cesim.com)); and became known by the name 'Global Challenge Simulation'. For simulation exercises within this particular setting, students are supposed to form small groups, with no more than 5 members each. These groups are meant to act as managers of a fictive mobile handset manufacturing organization, covering the American, European and Asian markets. Boards have to make decisions about key managerial issues on the basis of actual financial statements and consumer behavior,

while competing against each other on cumulative share price. The initial base setting reveals certain business dynamics that are inherent in the simulation. Additionally, a unique storyline was developed to supplement these already embedded elements, and to further the link between real life events and the simulation itself. As an example, we provide an excerpt from our second round storyline, where parameters of the simulation engine were set to match the corresponding storyboard.

*Unexpectedly, the collapse of a global housing bubble peaking in the U.S. caused the values of securities to plummet, damaging financial institutions globally and having widespread effects on economies. Leading specialists are calling the current event the worst financial crisis since the Great Depression of the 1930s. Economies worldwide are slowing down as credit is tightening and international trade is declining. The worst effects are expected in the U.S., with over 10% decrease in demand. The picture is similar in Europe, where consumers locked into 12-to-24 month contracts are unable to upgrade and price sensitive buyers are shopping around for cheap solutions. In Asia, weak consumer confidence and poor replacement sales coupled with price increases will probably result in some demand decrease as well, though so far the Asian economies seem more resilient. As a consequence, Tecno Analytics Inc., the research group, believes Tech 2 is still attractive, particularly in Asia. From the technology viewpoint, due to sudden breakthroughs in network technology, Europe and USA are now able to support Tech 4 mobile phones. The R&D expenses for developing the new technology are believed to be enormous.*

Finally, in order to ensure the anticipated price war, the following modifications were added:

- Of the three markets in the simulation, the Asian one has been parameterized as a highly price sensitive market. In addition, there are supplementary factors affecting demand; namely marketing and number of features offered per product (max. 10, such as touch screen). Finally, using linear regression, participants may conclude that over 80% of the variability in demand can be explained by price.
- The relatively low number of teams (5-8 teams) ensures the oligopolistic industry structure, as players are expected to closely monitor each others' prices.
- The commoditization of a product is supported by introducing different, higher grade technologies throughout the lifecycle of the simulation. Therefore, the so-called Technology 1 (Tech 1) product becomes a commodity early on, as three other technologies (Tech 2, Tech 3 and Tech 4) are introduced shifting

consumer interests, and receiving higher values along the technology attractiveness index.

- In the two remaining markets, customer demand tends to be driven by marketing and available features more so than by pricing. Each competing company can only bring a maximum of two products (out of four) to any given market. As a consequence, the price war can be localized to a limited theater of operation (usually to one market and one product).

### PARTICIPANTS

MBA students enrolled in various programs at CEU Business School participated in the current study; including one full time MBA (FTMBA), one part time MBA (PTMBA), and one executive cohort (EMBA). Notable variations exist, on average, between the three groups on the basis of their total prior work experience, as well as the extent to which they can collaborate in a face-to-face fashion. More specifically, FTMBA students tend to have the least amount of prior work experience, on average, but spend most of their time with their peers, whereas EMBA students tend to have the most experience, but meet their peers the least, resorting to electronic means of communication to a large extent.

### RESULTS AND DISCUSSION

In order to descriptively assess the current simulation tool, we surveyed the participants to evaluate their exposure to international business and cultural problems. In the following section, we provide a brief summary for the results of the surveys. We also discuss our findings related to the price war effect.

*Q1: Have we achieved exposure to global cultural issues?*

The decision making and collaboration elements incorporated in the simulation aimed at exposing students to global cultural issues. The establishment of the ‘global collaboration teams’, via mixing various nationalities, further assisted this process. One particularly unique feature associated with the Central European University should be note here; namely its unusually diverse student body, with a typical representation of over 20 countries in a 50 person group. This is a great asset when addressing global as well as culturally variable trends.

Additionally, the underlying unique characteristics of the three locations established the basis for discussing strategies specific to each market. Many of the problems required agreements between team members. Students found the ways in which discussions, arguments and sometimes heated debates were handled by different members of the teams of particular interest; enhanced by the dynamics embedded in business simulations, which would be more difficult to achieve with standalone case studies.

*Q2: Have we achieved exposure to global issues?*

We received overwhelmingly positive responses to this question from all three MBA groups. Participants agreed that by linking the simulation to real life events, the entire exercise became more interesting, and this setup encouraged them to think more about the international nature of business concepts.

*Q3: How was the price war element experienced by the participants?*

We address this question through an explanatory assessment, and thus we turn to evaluate individual participating team results. Initially, we assessed the options likely to be available when aiming to deal with the price war element (see Table 2).

TABLE 2. Ways to Fight the Price War (adopted from Rao et al., 2000)

Tactics	Example
<i>Nonprice Response A: Co-opt contributors</i>	Strategic partnerships are not possible in the simulation with suppliers, but outsourced manufacturing is available and using it appropriately, teams can secure increased quantity at lower prices
<i>Nonprice Response B: Reveal your strategic intentions and capabilities</i>	Reveal cost structure to the other teams
<i>Price Response A: Deploy simple price actions</i>	Adjust the product’s regular price in response to a competitor’s price change
<i>Price Response B: Introduce new products</i>	Introduce different products on a given market

Within the simulation, the Tech 1 product in the Asian market was designated to be the target of a price war. Teams have rallied on decreasing the price; from the initial \$250 to around \$100 by the 5<sup>th</sup> round (see Table 3). In rounds 4, 5 and 6 we observed the typical ‘sticky price’ concept.

In oligopoly markets prices can become ‘sticky’ because if the price rises, competitors will not follow. Hence, the merchant will lose its market share to its competitors offering lower prices. However, if the price falls, other players and merchants will follow if they can. At a certain point, merchants realize that they can no longer make a profit if they cut the price further; hence the sticky price remains.

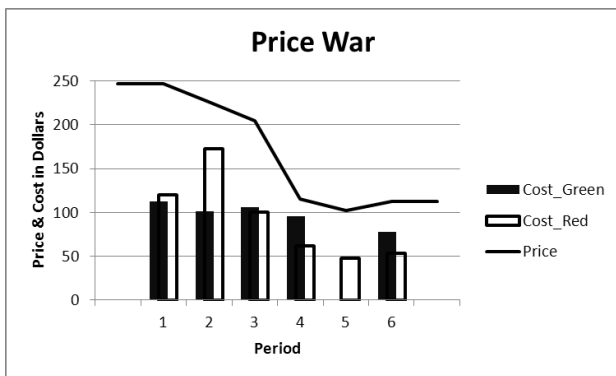
For a more detailed analysis, we display the average price on the market and unit costs for two teams (Table 3 and Figure 1) throughout the 6 rounds, and characterize them with the Tactics Options outlined in Table 2.

TABLE 3. Price War Between Green and Red Team

Period	Price (\$)	Unit Cost Green Team (\$)	Unit Cost Red Team (\$)
1	246	113	120
2	226	101	150
3	204	106	100
4	115	96	62
5	102	-	48
6	112	78	53

On the one hand, as apparent from the figure, the Green team has not anticipated the price war and thus continued to decrease the price (Price Response A). Given their cost structure, they were unable to follow in Round 5, and chose to introduce a new product (Price Response B). In round 6 they returned to the market with a slight price increase.

FIGURE 1. Price War Illustration



On the other hand, the Red team seems to have anticipated the price war, taking a preemptive measure in Round 2. This was achieved by higher production costs, but also ensuring that via the learning effect incorporated in the production line, production costs would later decrease (Nonprice Response A). They also followed the price decrease at the beginning of the rounds (Price Response A). By round 5, it became obvious that none of the competitors could follow the Red team given its superior cost structure. However, Red team was also facing financial problems and was happy to gain profit by increasing the price to its 4<sup>th</sup> round level. Thus the Red team used Nonprice Response B to show that it could decrease its price with seemingly no intentions to do so.

*Q4, In terms of their overall participation, are there any differences among the three MBA cohorts?*

During the evaluation phase, the Global Challenge Simulation has been tested on the basis of the results originating from the three different MBA groups. Table 4 summarizes the use of the online decision making environment and key metrics (cumulative share price) applied for grading and evaluation, separately for each group.

TABLE 4. Global Challenge Simulation Metrics

Group	FTMBA	EMBA	PTMBA
Work Experience (years)	3-5	6-8	9-10
# of students	30	24	40
# of Teams	6	5	8
Average Total Time per Team (hrs)	124	77	86
Highest Cumulative Share price	-0.02%	3.25%	8.35%
Lowest Cumulative Share price	-19.45%	-15.27%	-13.91%

Interesting further trends can be observed on the basis of the comparative results. While the overall opinion of all students was positive, it is important to point out some interesting trends and discrepancies in the groups, and thus emphasize the need to evaluate these kinds of simulations with caution. For example, of the three groups, FTMBA students appeared to spend the highest amount of time in the simulation environment, and yet achieved the lowest cumulative share prices. This may indicate that simulations of this sort are likely to be overly complex for FTMA students, or the very least they may require additional support in understanding the underlying business logic.

Surprisingly, EMBA students used the least time for online collaboration – and also achieved lower results than the PTMBA students. Since EMBA students have a higher level of average management experience when compared with PTMBA students, this seems to imply a lack of communication and collaboration. Indeed, when carefully evaluating the metrics, it became obvious that EMBA students were working more in silos (individually) within groups and shared information only at the very end, right before the decision making.

### CONCLUSION

In our increasingly global environment, multicultural experience and expertise are considered to be great assets [5], [6]. In order to assist students in their quest for expanding their relevant skill set, many universities undertook the challenging task of attempting to internationalize their curricula [7]. In the current paper, we expanded on the three-stage operational framework [2] by emphasizing the inherent advantages of business simulations in enhancing students' global mindset.

Using the 'Global Challenge Simulation' (Cesim Ltd.) as our base, we have created an extensively global setting,

in which to evaluate decisions of full-time, part-time, and executive MBA cohorts, associated with three different markets and an arising price war. The differences in the results indicate that FTMBA cohorts may need the greatest assistance in understanding the overall logic and complexity of market-based decision scenarios. Moreover, as supported by the superior results of PTMBA as opposed to EMBA students, it appears that despite the latter groups' greater work experience, at least some level of on-going collaboration may be advantageous. The similarities in our results associated with the price war and those in a real market setting further support the immense value of simulations.

Overall, we conclude that carefully selected simulations support and enhance the skills associated with the international competence level within the Edwards framework, and thus could be greatly advantageous for institutions as well as for participants of various programs. There are some specific recommendations we wish to highlight. Namely, the experiential element should:

- provide an interesting storyboard, by simulating a challenging and complex real-world environment with concrete problems, in which students can apply their theoretical knowledge. This storyboard is ideally one that can be modified in order to meet the specific interests and background of participants;
- enable immersion in a global environment – i.e. not remain specific to one geographical area or country, but rather encompass multiple countries;
- be integrative in terms of subject areas – i.e. not limited to supply chain or marketing, but instead exposing students to overall business issues through integrating various subject matters and disciplines;
- enable online collaboration of geographically dispersed groups and/or individuals, with an opportunity to at least some face-to-face interaction, to provide students with sufficient collaboration.

While simulations of this sort can prove to be greatly beneficial for institutions as well as for individual participants, we should note that conducting a simulation exercise with the aim of achieving its full potential is a relatively time consuming endeavor, normally requiring one primary faculty member in charge of the exercise itself, and others to provide the content-related expertise, depending on the desired mix of various subject matters. Nevertheless, simulations can provide a great tool for the successful acquisition of cultural and globally relevant issues, and universities are encouraged to utilize these techniques to diversify their curriculum. Furthermore, we should recognize the inherent potential of simulations in terms of providing a bridge between various disciplines. As businesses do not exist in a void, but instead are impacted by various external environmental or political factors, simulations could be useful as an interdisciplinary tool within as well as outside of business-related disciplines.

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