

Competitive Analysis With The Income/Outcome™ Board

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ABSTRACT

The paper demonstrates the use of the income/outcome™ game board as a competitive analysis tool. Companies in the floor covering industry are displayed and conclusions for competitive strategies are drawn.

INTRODUCTION

Competitive analysis is one of the key areas in corporate strategies and it appears to increase in relevance for US corporations [David, 2005]. Typically competitive analysis utilizes Porter's Five-Forces Model [Porter, 1985, David, 2004, Kotler, 2003], and these five forces describe the areas from where threats on a company's long-term profitability may be coming. These threats are typically described as rivalry within the segment, bargaining power on the supply or on the customer side, the threat of new competitors (new entrants), and the threat of substitute products.

The income/outcome™ business simulation is a teaching tool used in industry as well as education to teach financial concepts and strategies. During the simulation teams compete against each other in the market while considering their cash flow and their costs. The income/outcome™ board has previously been used to visually enhance financial analysis [Hergeth, 2004 and 2003] of individual firms, and this paper investigates the usefulness of company boards in developing competitive strategies for companies. Specifically, the paper investigates which of the Five Forces can be visually displayed on the income/outcome™ company board.

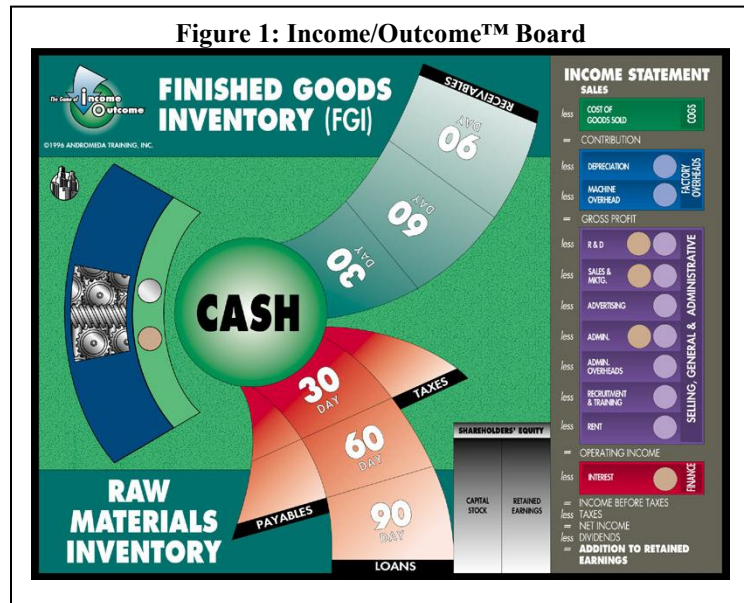
INCOME/OUTCOME™ SIMULATION

Income/Outcome™ is a "simulation-based finance-learning tool that helps to develop business visualization skills in all employees" [Andromeda, 2004]. Allowing participants to see business and financial activities leads to more identification with their role in the business and to better understanding and learning [Hergeth & Smith, 2004]. During the course of the simulation, participants manage a company, make decisions, etc., and every business transaction is reflected in a financial transaction that mapped out on the company's board. Thus the income/outcome™ board becomes a simplified visual representation of the company situation at any given moment in time. The focus of the board is showing potential cash flow problems, cost structure, leverage issues, capital structure, and some key activity ratios.

The income/outcome™ board (see Figure 1) contains all the major components of the balance sheet and the income statement of a company. Equity is displayed as a general indicator of long term success. Debt and accounts receivable are displayed as streams that flow into a cash circle over time, providing a visual image of the time dimension of money. The board distinguishes investments in land and buildings versus equipment as well as various inventories, and it reflects cost structures as overhead costs and costs-of-goods-sold.

The purpose of using the income/outcome™ simulation is to provide business literacy training for members of corporations at all levels and in all functions [Orbanes, 2002] as well as for students in the classroom [Hergeth & Jones, 2003]. At the same time the team boards develop differently during the course of a simulation and display very different company situations when compared. Each team of participants uses the information on their own board in comparison with other boards in the simulation to develop a promising strategy. All the boards in a room represent the competitive situation within a specific simulated market.

Just like the company board can be used to enhance the financial analysis of a specific company, a group of boards can provide a visual image of the competitors within a specific market. Of course it is important to realize that the level of abstraction in this case is not limited to company variables, but it extends to simplifying the areas of competition and the number of competitors, and most importantly the definition of the business field or the market itself. Many companies are active in a variety of markets, and competition can sometimes come from rather unexpected areas. An analysis of the company boards relative to each other will provide some strategic direction, but not result in recommendation of specific actions. At the same time it should provide this general direction that can easily be neglected if day-to-day discussions put too much emphasis on tactics and short term opportunities.



COMPETITIVE CASE STUDY

Five companies within the floor covering market were selected using Hoover’s Online service [Hoovers, 2004]. The selection of the companies was guided by the list of competitors, excluding companies without published annual reports. The companies mostly represent carpet manufacturers, but Pergo and Internacional Ceramica represent examples of non-carpet competition that needs to be considered in a competitive analysis. Clearly these five companies are not representing the complete market, but they can provide an example of a competitive analysis with companies of significant difference in size as well as difference in the specific products they manufacture. The analysis is therefore meant as an example of the tool rather than a complete competitive analysis of the floor covering market.

Table 1 shows the five companies with some key financial numbers of their 2003 reports. According to the respective company descriptions on Hoover’s [Hoovers, 2004], *Mohawk Industries* appears to dominate the market in this table, however they are only the second largest manufacturer of carpets and rugs in the United States (largest is Shaw Industries, however not public). They also produce ceramic, stone, vinyl, and wood flooring. While heavily based in the residential market, Mohawk demonstrates customer focus by covering the complete flooring market and by growing continuously through acquisitions [Mohawk, 2003]. *Interface* produces modular carpets, office panels (cubicles), and upholstery fabrics. Their focus is commercial carpeting, and they are considered leaders in the area of sustainability and environmental responsibility, which provides them a competitive advantage in commercial buildings [Interface, 2003]. *The Dixie Group* manufactures commercial and residential carpets as a vertically integrated manufacturer. By the end of 2003 the company sold a significant portion of their assets to Shaw Industries in order to focus on the company core in the high end markets, where they have strong brands [Dixie, 2003]. *Pergo AB* is based in Sweden, though about 60% of their sales are in North America. They produce laminated flooring and accessories, and their primary strategy revolves around product innovation, design, and product branding while

maintaining cost efficiency [Pergo, 2003]. Interceramic (Internacional de Cerámica) produces glazed ceramic floor and wall tile and related products for residential and commercial use. Primary markets are Mexico and the US, and while maintaining strong brand recognition the company also developed products for private label markets. The strategy appears to focus around optimizing and upgrading the distribution network, including own retail entities and franchise networks [Internacional de Cerámica, 2003].

Table 1: Key Financial Results

Mio US\$ 2003	Mohawk	Interface	Dixie Group	Pergo	Interceramic
Sales	5005	924	234	366	305
COGS	3539	634	136	286	184
Assets	4163	895	240	220	308
Profit	310	-13	-9	-22	4
Equity	2298	219	96	153	89

The individual company boards are shown in the appendix. While earlier papers investigated the financial situation of individual companies and compared companies of similar size, real market situations may have vastly different size companies competing with each other. Figure 1 shows the six companies as the group making up the competitive group as they would look in an income/outcome™ simulation.

Figure 1: I/O™ Company Boards for five Competitors



Seeing the five boards next to each other demonstrates that they in fact look very different even though they serve the same market. The following attempts to discuss if the Five Forces identified by Porter can be recognized in the company boards.

SEGMENT RIVALRY

Rivalry among competing firms is generally considered the most powerful of the Five Forces [David, 2004]. This force can lead to an undesirable segment if the number of competitors in a market is very high, or competitors are very aggressive [Kotler, 2003], and certain market conditions can make the segment even less friendly, e.g. declining demand [Harrigan and Porter, 1983] and high exit barriers like strategic reasons for competitors to stay in the market, high fixed cost investments, etc. [Kotler, 2003].

During the Income/Outcome™ simulation segment rivalry is primarily displayed through the number of competitors of similar strength (at least in the beginning of the simulation) and through the declining growth rates in market demand. The standard simulation leads to overcapacity as the market grows, and a high financial stake in capacity investments and potentially high exit costs lead competitors to compete increasingly aggressive. Segment rivalry is very effectively demonstrated by the simulation. Comparing market developments of different participants, some more and some less aggressive, also shows that competition does not have to be price competition and can lead to high average profits, but as soon as any of the competing teams begins a price war, it is virtually impossible to maintain significant profit margins for any of the teams.

This competitive situation cannot be shown on one specific company board other than the resulting low profits, and the dynamics of aggressive price competition are most visible during the market simulation, which happens off the company board. Market conditions that lead to fierce segment rivalry are stagnant or declining demand, and they are not visible on the company board. During the simulation this information is available to participants, just like market research reports provide this kind of information to competitors in a real market. The resulting low profit margins due to a price war are visible on company boards, and the floor coverings market clearly shows some of those signs as the profit margins in Table 2 indicate.

Table 2: Profit Margins by Firm

Company	Mohawk	Interface	Dixie Group	Pergo	Interceramic
Profit Margin	6.2%	(1.4%)	(3.8%)	(6.0%)	1.3%

Of course declining markets are not the only reason for fierce segment competition. Other reasons deal more with company or even industry specific circumstances, e.g., high exit barriers [Kotler, 2003]. High exit barriers can be due to technical as well as economic conditions that make it undesirable or impossible to discontinue or downscale an operation. High investments into inflexible production capacities, investments into brand equity, or high environmental costs when discontinuing an operation can provide great reasons for a company to seek orders through aggressive pricing.

On the Income/Outcome™ company board the onset of such conditions can be seen if there is large build-up of fixed assets, either in land & building or in equipment. It is important to consider the absolute value as well as the value of assets relative to company size (e.g., expressed through sales volume), and both can be done visually on the company board. All companies in the case study have significant investments. In the case of Mohawk and Interface the largest portion of assets stems from intangible assets like goodwill. This may reflect a stake in market or brand equity rather than physical capacity. Just like physical production assets intangible assets cannot easily be downscaled without incurring a significant loss. Thus maintaining cash flow to continue operations even at low or negative profit margins is a viable consideration. Of all the companies in this study, only Pergo has significantly lower assets than sales volume. However, their Cost of Goods Sold is much higher at 78.1% than any of the other companies. The lowest COGS is enjoyed by the Dixie Group with 58.1%. It should be noted that both these

extremes show the two lowest profit margins of the group for 2003, showing that COGS alone is not the key to success.

The second major cost group is factory and corporate overheads, and here Mohawk Industries clearly lies ahead of the competition with 23.1% as can be seen when comparing the company boards. This is where the losses of the Dixie Group occurred (45.7% overhead), and they are likely to be caused by the restructuring efforts towards the end of 2003.

POTENTIAL ENTRANTS

The threat of new competitors entering the market is closely related to the intensity of segment rivalry as they will increase capacity in a given market. The degree of threat by new competitors depends mostly on the level of market entry barriers, such as how quickly they can gain economies of scale, experience, brand recognition, and what kind of access they have to distribution and supply channels [David, 2004, Kotler, 2003]. In the floor covering industry production capacities and know how as well as distribution channels provide a significant entry barrier, but companies from related industries can certainly make their way into the distribution channels (as the case of Interceramic shows).

This second force is typically not shown during the Income/Outcome™ simulation and is not visible on the company boards. For the simulation it could be introduced via script, but company reaction is typically no different to new entrants than it is to existing competitors.

SUBSTITUTES

The threat of substitute products can be even more difficult to assess than new entrants into the market. Substitute products, whether they are developed within the market by the company or its direct competitors or whether developed by companies outside the existing market (by potential entrants), not only change the supply-demand balance by providing more supply, but they typically also change the cost structure and provided benefit structure of the supply in the market. Substitute products immediately put pressure on the price levels in the market due to increased supply and possibly due to their better cost structure; if the benefits of the of the substitute product are significantly higher due to better technology, improved safety features, etc., even reduced profit margins may not be able to maintain market share.

The described market already includes many of the typical substitutes for carpeting, i.e. wood, vinyl, and tile flooring. While some companies focus on carpeting, others offer tile flooring or offer the complete variety of floor covering products. At the same time it is important to be aware of any technological changes that may alter the cost structure of the existing products or provide new substitute products in the market. Especially if these substitutes are developed by existing competitors, entry barriers to the market that may deter new entrants (e.g., access to the distribution channels and brand reputation) are nonexistent and such substitutes can penetrate the market rather rapidly. On a strategic level, substitutions can also change the market structures by either creating sub-markets or by blurring former segment lines and combining formerly separate segments [Porter, 1985].

The company board in its standard version does not consider multiple products or substitution products. A strategic version of the simulation considers multiple products and markets and accounts for development time and market access considerations. The standard version of the simulation considers product improvements and market sub-segments; these are viewed from the existing market as a tool available to all competitors, and their use can be displayed on the company boards. While information on such relative advantages like better productivity, better product features, etc. are difficult to determine from annual statements and are therefore not displayed in the company boards in the appendix, they can be shown on company boards if such information is provided. However, potential substitute products that are not yet existent can only be shown as an intangible asset, and it is very problematic to quantify.

BARGAINING POWER OF SUPPLIERS

The bargaining power of suppliers is a significant force as supplier prices are a key determinant of the company's overall cost and cost structure. Supplier power is determined by degree of concentration and organization of the suppliers, the availability of substitute input factors and the cost of switching, and finally by the potential of vertically integrative moves in the industry [Porter, 1985, Kotler, 2003]. Another key factor to supplier bargaining power is the magnitude of the company's demand relative to the total supply market. While large volume buying is typically viewed as a bargaining chip for the buyer, it also limits the supply alternatives and therefore makes a company more vulnerable to suppliers.

The considered companies use similar raw materials when it comes to yarns in the carpet area, and in the case of the Dixie Group we see a vertically integrated company where the supplier threat has been shifted (there are still suppliers for Dixie, but they are fiber producers rather than yarn producers, and those supply market conditions can be quite different. Carpet substitutes wood, tile, and vinyl use very different raw materials that are likely to have very different supply dynamics as well. There is no significant evidence that the supplier bargaining power is unusually high in this market.

The company board does not indicate supplier power as this happens outside the company walls. At the same time the effects of supplier power can be shown on the board through limitations in raw material supply and through payment conditions, assuming that powerful suppliers do not have to extent generous payment terms. During the simulation threats of supplier power can be scripted into the raw material dynamics. Market dynamics on the supply side can be simulated similar to the market simulation on the buyer side. Supply chain interruptions and imbalances are more typically simulated by supply-chain simulations, but given the general overcapacity in the fiber and yarn markets this does not appear to be a relevant threat to the industry.

BARGAINING POWER OF BUYERS

The bargaining power of buyers is the counterpart to supplier power, and it is determined in a similar fashion by the degree of concentration and organization of the buyers, the degree of product differentiation, availability of substitutes and switching cost, potential for vertical integration, and general price sensitivity of the product [Porter, 1985, Kotler, 2003].

Typically profit margins are used as an indicator for strength in the market, and this would indicate a strong consumer market in the analyzed segment. The largest competitor (Mohawk) fairs the best using this measure, and this may in part be due to the fact that their product range covers all floor covering possibilities. Other producers focus on specific sub-segments, e.g. Interface on the commercial applications or Interceramic on ceramic tiles, but this product differentiation does not seem to overcome pricing and therefore profit aspects in the observed timeframe.

The company board itself shows only the results of buyers' power in form of profits and profit margins. The simulation however has a strong focus on this aspect of the market and does allow cost strategies as well as product differentiation strategies to be represented. As such, the ability to differentiate the product through specialization or customization or quality efforts as well as the ability to produce more cost efficiently than other firms can be visualized on the company board. Typically this requires some inside information so that the degree of product differentiation or cost efficiency can be displayed appropriately for different competitors. One indicator in this case might be the costs of goods sold, and this would indicate that the Dixie Group and Interceramic are working more cost efficiently than their competitors. Unfortunately it is not possible to deduct from the annual reports how different the respective product differentiations really are.

CONCLUSIONS

As shown previously the Income/Outcome™ company board allows effective visualization of the financial and structural situation of a company. This paper investigated if competitive forces as described by Porter can also

be visualized though the use of the company board. There are clear limitations if one relies exclusively on data from annual reports, as the relative ranking of factors outside the company is difficult without some inside information. If such information is available, segment rivalry as well as the bargaining power of suppliers and of buyers can be visualized and simulated with the company boards. It may also be possible to simulate the threat of new competition entering the market if such information is available. Development of substitute products is probably most difficult to represent on the standard company boards, because they typically only show one product type. The strategic simulation board allows some expansion showing different products with different product development requirements, and this may be a possibility to visualize and simulate the threat of substitute products as well.

BIBLIOGRAPHY

1. Andromeda (2004), Home page, <http://www.income-outcome.com>.
2. David, F. (2005), *Strategic Management, Concepts and Cases*, 10th edition, Pearson/Prentice Hall, New Jersey.
3. The Dixie Group, Inc. (2003), Annual Report, Form 10 K, from <http://www.thedixiegroup.com> .
4. Harrigan, K. R. and M. Porter (1983), “End-Game Strategies for Declining Industries”, *Harvard Business Review*, 7/7, 1983, pp. 111 - 120.
5. Hergeth, H. (2004), “Income/Outcome™ Analysis of Apparel Companies”, *International Business & Economics Research Journal*, Volume 3, Number 3, March 2004, ISSN 1535-0754, pp. 1 – 14.
6. Hergeth, H. (2003), “Income/Outcome™ Analysis of Regional Differences in Apparel Companies”, Proceedings of the Second International Business and Economics Conference (full paper review, ISBN 87-89695-76-3, paper #6), San Francisco, CA, January 9 – 12, 2003, 10 pages.
7. Hergeth, H. and M. Jones (2003), “Board Games and Teaching Textile Marketing and Finance”, Annual Conference Proceedings for ABSEL (Association for Business Simulation and Experimental Learning), Developments in Business Simulation and Experimental Learning, Volume 30, 2003, pp. 126 to 130.
8. Hergeth, H. and G. Smith (2004), “Inquiry-Guided Learning in a Management of Technology Environment”, Conference Proceedings of the College Teaching and Learning Conference (Article 111), Orlando, January 5 through 9, 2004, ISSN 1539-8757.
9. Hoover’s Online (2004), online information service, <http://www.hoovers.com> .
10. Internacional de Cerámica, S.A. de C.V. (2003), Annual Report, from <http://www.interceramic.com>
11. Interface, Inc (2003), Annual Report, from <http://www.interfaceinc.com> .
12. Kotler, P. (2003), *Marketing Management*, 11th edition, Prentice Hall, New Jersey.
13. Mohawk Industries, Inc. (2003), Annual Report from <http://www.mohawkind.com> .
14. Orbanes, Phil (2002), “Everything I Know About Business I Learned from Monopoly”, *Harvard Business Review*, Vol. 80, Nr. 3, March, pp 51 ff.
15. Pergo AB (2003), Annual Report 2003, from <http://www.pergo.com> .
16. Porter, M. (1985), *Competitive Advantage*, The Free Press, New York.

Appendix

Mohawk Industries



Interface, Inc.



The Dixie Group



Pergo AB



Internacional Ceramica

