Strategizing for Mass Customization by Playing the Business Networking Game

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Abstract: This paper introduces a multi-player simulation game to let players experience how the trend of mass customization and personalization changes stable business networks into dynamic networks. The game, called Business Networking Game, lets players experience the changing dynamics of business networks and stimulates their thinking how to deal with the mass customization trend within their own businesses. The game can be tailored to any industry context. In this paper the game is introduced by means of an application within the insurance industry. This paper describes the theoretical background, the design of the game and our experiences with the first playing sessions.
1. Introduction
This paper introduces a multi-player simulation game to let players experience how the trend of mass customization and personalization changes stable business networks into dynamic networks. Stable business networks consist of a fixed set of organizations that collectively produce and deliver goods and services to the market. Forced by changes in customer demand (e.g. customers ask for more service and personalized products) and the rise of enabling internet technologies organizations have the opportunity to redesign their business networks and form new alignments with those parties that are needed to fulfill personalized customer requirements. This is called dynamic business networking: forming temporary alignments with those parties that are qualified to produce and deliver customized goods and services (Miles & Snow 1992).

The goal of the game, called Business Networking Game, is twofold. The business management objective is to let players experience the changing dynamics of business networks and stimulate them in their thinking how to formulate an ambition what role they should or want to play in their business network and how to reach this ambition. The research objective is to explain and predict changes in structure and process of a business network order enforced by mass customization and enabled by internet technologies.

In this paper we describe the theoretical background, the design of the Business Networking Game and our experiences with the first playing sessions. Finally, conclusions are drawn and directions for further research identified.

2. Background
The rise of mass customization forces organizations and business networks to move from a market-push towards a market-pull situation: the customer is no longer the last party in the chain to consume what has been produced, but the first party in the chain to formulate his or her requirements. Pre-formed stable business networks of organizations are no longer valid since an actually formulated customer order determines which organizations are required to fulfill this order. Like Jarvenpaa & Ives (1994) stated, organizations should 'think in reverse', meaning that they first should determine individual customer demand, and then organize a chain or network of organizations for order fulfillment and delivery. In doing so, the participants form temporary alignments dedicated for the fulfillment of a single customer order. After order fulfillment the temporary alignment often dissolves again, with the participating organizations being ready to form other, new alignments (after Miles & Snow 1992).

In the process of forming temporary alignments the task of collecting customer orders and translating them into the required tasks and fulfilling organizations is very important. The chain or network coordinator is responsible for this task. The coordinator is the organization that receives the customer order and is responsible for the forming of the right temporary alignment that will fulfill the order as requested by the customer. The coordinator’s primary responsibility is to identify the requirements of customers, to identify appropriate satisfiers, like resources, skills, semi-finished products, to produce the requirements, and to match requirements to the satisfiers (based on the theory of the virtual organization of Mowshowitz 1997).
Hoogeweg et al. (1999) propose a modular approach to support the matching task of the coordinator to allocate the right satisfiers to the right requirements. This means that customer requirements are modeled in modular service elements and that satisfiers will be modeled in competence elements. By linking the service elements to the competence elements only those competence elements are activated which are actually asked for by the customer by selecting a specific set of service elements. The coordinator is responsible for collecting customer orders, in terms of sets of service elements, and the right translation of service elements into competence elements and for the choice of the appropriate organizations within the dynamic network who own these competence elements. In a dynamic market with many customized requests for products, each customer order consists of a different set of service elements and therefore a different set of competence elements is needed, which results into a different set of organizations that fulfill in a temporary alignment, this specific customer order.

The Business Networking Game aims to illustrate how the modular approach enables organizations to meet customized demand and how they participate in making stable business networks more dynamic.

3. Game design
The Business Networking Game is developed by the Erasmus University Rotterdam in cooperation with Media Plaza and A.T. Kearney (see for details Hoogewegen 2001). The Business Networking Game is set up in three rounds.

During round 1 a stable network of organizations is simulated. These organizations participate in the fulfillment of customer orders. Each organization is managed by one of the players of the game, while a game master plays the market and therefore controls the generation of customer orders. The aim of the players is to maximize profits. All players have a predefined role in fulfilling standardized customer demand. They own a fixed set of competence elements and have a fixed set of relations with other organizations.

In round 2 the nature of customer orders placed at the market changes. Customers now ask for customized products and services and aim for lower prices. Players will experience that their margin erode and that their current set of competence elements and relations with other organizations are no longer sufficient to meet the changed customer demand.

At the beginning of round 3 all players are allowed to invest in four ways to regain their market share: (1) buy new competence elements; (2) specialize in current competence elements (or in the new ones bought); (3) buy new relations with other organizations; (4) invest in a relation with the market to be able to receive customer orders and therefore become a network coordinator.

During round 3 the stable network of round 1 changes into a dynamic network due to the investments made of all players. At the end of round 3 players will find out whether they have followed a winning strategy: the organization that made the highest profit wins the game.

The game is a generic model that can be tailored to any business network setting. Currently two applications have been made. The first application simulates an automotive
supply chain, from the production of cars to the dealers selling cars to end-customers. The second application simulates an insurance network consisting of issuers of insurance policies and insurance agents advising end-customers. The insurance case is developed in cooperation with A.T. Kearney. In this paper we will further illustrate the design of the game by means of the insurance case. Figure 1 shows the organizations that participate in the insurance network as modeled in the game as well as the competence elements defined in this network and how they are distributed among the parties.

![Figure 1: The insurance network playing setting](image)

The insurance network consists of eight organizational units grouped into four separate organizations: two agents ("Agent 1" and "Agent 2") and two issuers of insurances ("Brand A" and "Brand B"). The two agents have direct access to the market and therefore are the network coordinators. The two issuers offer insurances for cars, homes and traveling both for individuals as well as for groups of people (e.g. companies). They are modeled in four business units each and these units are represented in the game as separate organizations. The first business unit is called "Brand" and is responsible for the branding and marketing of the policies. The second business unit is called "Admin" and takes care of all administrative processes of handling policies. The third business unit is called "Under" and is responsible for the underwriting of policies, that is the allocation and spreading of the involved risks of the issued policies. The fourth business unit is called "Claims" and is responsible for the settlement of all damage claims of insured customers.

The competence elements modeled in this application are: providing the customer advice (1) or not (2); branding (3 and 4); handling a policy for individuals (5) or groups like companies (6); under writing cars (7), homes (8) or traveling (9); and settling claims for cars (10), homes (11) or traveling (12). By means of offering their competences, each organization will participate in the fulfillment of customer orders and will generate a certain margin. The margin is based on the price organizations receive for executing their competence elements minus the variable costs of executing these elements minus the fixed costs of owning these elements.
Customer orders are defined in service elements (not detailed here). The service elements are translated by the network coordinators (Agent 1 and 2) into the mentioned competence elements and distributed within their networks for fulfillment. During rounds 2 and 3 of the game the type and combinations of service elements asked for by customers will vary more and more. In this way we simulate the trend of mass customization.

4. First playing experiences

Our first playing sessions with students illustrate what kind of learning experiences are achieved and what kind of results a playing session produces. Here we will shortly describe what happens during a specific playing session and how the end result looks like.

During round 1 each player generates a predefined margin by receiving and fulfilling requests to deliver their competences. We have calibrated all parameters, e.g. the fixed and variable cost per competence element and the investment cost involved in acquiring such an element.

During round 2 the market will ask for cheaper policies and will ask for new combinations of service elements and therefore new combinations of competences (customization). The two coordinators, Agent 1 and 2, are pressured to sell different and cheaper policies and they will try to negotiate prices down of competences owned by others in the network. All players will notice the pressure on their margins and the need for offering new sets of competences and hopefully start thinking how to recover these margins. After round 2 they are allowed to invest (as described in the previous section). Figure 2 shows how the players have invested.

Figure 2: The changed network due to the investments players made

As figure 2 illustrates, all players apply one or more of the four investment options available. For instance option 1 is considered by “Under A” who buys all competences to be able to settle claims himself and therefore aims to exclude “Claims A” from performing these competences. Option 2 is exercised by “Claims A”, this player decides to specialize
all his elements and therefore increases his fixed costs per turn, but at the same time lowers the variable costs of executing these competences. In this way “Claims A” is able to lower its price on the market and will therefore be able to increase orders that will (hopefully) more than compensate the increased fixed costs. Option 3, to buy a new relationship, is for instance done by party “Brand B” who establishes a relation with “Admin A” and therefore introduces competition between “Admin B” and “Admin A” to lower the prices they ask for their competences. Option 4, to establish a relationship with the market and thereby becoming a network coordinator is done by “Brand A”.

Based on all the investments made a totally different, more dynamic, business network has been created. Figure 3 shows the end result of this particular playing session. It shows the margins made per organization per round. The line shows the differences per organization in margins made between the first and third round. This illustrates the relative improvement or deterioration of their profitability in round 3 compared to round 1 and therefore whether their strategy was successful or not.

Figure 3 shows that “Admin A” is the winner of the game because it realized the best margin improvement. This organization wins because he specialized his competences, became the cheapest provider of settling claims, and others in the network were able to find his low cost service (see relations established by “Under B” and “Brand A”). The loser of the game, “Admin B”, learned that buying new competences was not a successful strategy. It appeared that Under B specialized the same set of competences and was successful in keeping its current inflow of orders.

![Network Profit Share Improvement (in %)](image)

Figure 3: Margins achieved per organization per round
This particular playing session is just an illustration how the game works and what kind of results the players collectively produces. To become the winner of the game is determined by which strategic options you choose as well as how well these options fit the strategic decisions taken by the other players.

5. Conclusion
The trend of mass customization forces whole business networks to redefine their strategy in terms of the kind of competencies to improve, acquire or outsource and in terms of with whom in the network to establish relationships. The game nicely illustrates that changing customer demand both delivers opportunities and threats. Should you choose for the wrong strategic options you will loose, should you choose the good ones you will win the game. It is the total set of decisions taken by the individual organizations that will make a specific strategic option a winning one or not.

The first playing sessions indicate that the game is a meaningful tool to let players experience and learn how to deal with the ongoing trend of mass customization and personalization.

More playing sessions and further research are necessary to improve the game and to test our hypotheses of why and how stable business networks will change into dynamic networks and who the winners will be.

References


