

An Analysis of Nontechnical Game Theory on Laboratory Sales Trainees in Saudi Arabia

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The purpose of this case study was to analyze 6 months of training application in a nontechnical game theory setting. Three laboratory sales trainees were studied using training reports that logged their strategic decisions and the amount of sales they obtained from their clients. A pure strategy game theory analysis was conducted on the decisions by the sales trainees. Two types of strategies were derived from the study: (a) allocentric and (b) egocentric. The egocentric strategies yielded higher personal payoffs, while the allocentric strategies yielded higher organizational payoffs. Training intervention was withheld during the 6-month period in order to allow sales trainees to select their own strategies. The conclusions from the study indicated that if training lacks strategic alignment with organizational goals, sales trainees might select egocentric strategies that yield higher personal payoffs more often than higher company payoffs.

Keywords: *game theory, sales training, laboratory management, Saudi Arabia*

Introduction

The development of training methodology has undergone intense study over many years. Numerous models of leadership and management strategy have been utilized in training sales employees. Strategic systems thinking play an important role in training employees in aligning their sales goals with corporate strategy. Stacey (2007) defined strategy as an organizational direction that changes in relation to time. The direction of the organization includes the activities and competencies required to create value based on the available resources. Sustainability is dependent on the creation of effective management strategy within the organization. The development of effective training within an organization requires analysis into techniques and implementation of organizational strategy into training sales employees.

Sales training requires implementation of skill and subject knowledge in order to improve effectiveness of the sales course. Several factors affect the effectiveness of sales training techniques (Attia, Honneycutt, & Leach, 2005). Clinical laboratory sales require further elements in the training equation. Laboratories are obliged to train their sales teams in their test menu and services. Additionally, the sales teams are required to learn how to explain technological advances in laboratory testing to clientele, and this requires experience in these fields. The development of medical technology requires sales teams to utilize technology during sales meetings with clients. The utilization of sales knowledge must be coupled with laboratory experience in order to ensure effective sales techniques.

This case study analysis was focused on a three-member sales team of a start-up laboratory in Saudi Arabia. Game theory was utilized in analyzing the training results of the sales team members. The effects of the game-theory training model were measured using the amount of business from the

clientele obtained because of the strategies taught to the team. The purpose of the study was to analyze whether the sales team would implement a strategy that would create higher payoff for the organization or a higher personal payoff. This strategy is based on the notion that training programs have to implement organizational strategy and goal alignment within the sales training. The sales team was analyzed in a 6-month training period with actual clients. Training logs recorded during this period were used for the case study analysis. Within the analysis period, training intervention was withheld to allow the trainees to make their own decisions based on their experiences and knowledge.

The focus of this paper is to show the importance of organizational strategy and goal alignment into training management in order for the organization to reap higher payoffs. Start-up companies face difficulty in implementing strategy alignment with training programs due to inexperience in the market. This study analyzes the actions of a sales trainee team in a start-up laboratory that did not implement strategy alignment into the training program. However, the sales trainees were made aware of the possibilities of their choices and the available strategic decisions. There was no emphasis on goal and organizational strategy alignment for the trainees. Conceptual framework for this paper is based on sales training, strategy alignment, and game theory.

Literature Review

Sales Training

Shepherd, Gordon, Ridnour, Weilbaker, and Lambert (2011) studied the training practices in small and large companies. They noted that there are significant differences in sales training approaches, methods, and content. Some similarities arose between the size of the organization and the training programs. However, the method of training differs between small and large organizations. Powers, DeCarlo, and Gupte (2010) concluded that there is no difference in the importance and effectiveness of training programs between small and large organizations. The size of the organization, according to their study, does not have a significant effect on the outcome and the impact of the training programs. Larger companies often have bigger training programs (Cron & DeCarlo, 2009).

Powers et al. (2010) argued that sales training is difficult to assess and the research related to sales management training is limited. DeSmet, McGurk, and Shwartz (2010) mentioned that effective training requires management to observe the interactions in the workplace before and after the training sessions. According to DeSmet et al. (2010), companies spend an estimated \$100 billion every year in training programs. They argue that the training does not have the management's intended impact. Honeycutt, Howe, and Ingram (1993) agreed with this claim in their study of the outcomes of training programs. Sales trainees did not feel any substantial improvement in their performance. Ingram, LaForge, Avila, and Schwepker (2006) argued that trust is an essential aspect of sales training. Trust between trainees and trust between management and their trainees is required to improve the sales training programs.

Although some researchers point to inadequate results of training programs, Powers et al. (2010) indicated that sales managers felt that their training programs were effective. Although the training managers felt that their programs were successful, there were differences in the cause for success from the training programs. DeSmet et al. (2010) argued that it is an extremely difficult task to evaluate sales training and determine what aspects of the program is the cause of successful training. The collective response of the managers interviewed in the study conducted by Powers et al. (2010) indicated that training is an essential part of the sales team development.

Team building is an additional skill that training programs have to implement (Powers et al., 2010). The results of the study conducted by Powers et al. (2010) was that team building only accounted for 4.5% of the topics covered in sales training programs. Menguc, Auh, and Uslu (2013) noted that sales teams are a vital part of creating knowledge for the customer, thereby increasing the ability of sales teams to obtain contracts. It is imperative that the training manager instill team building and leadership skills in order for the sales team to operate as a unit. Leadership and empowerment are two vital skills for sales managers to develop in the sales trainees.

Strategy Alignment and Integration

Sales training is a key component of organizational sustainability (Stacey, 2007). Attia et al. (2005) denoted three assessments required for effective sales training. The three assessments included training needs, impacts on trainees, and impacts on the organization. This basic training model coincided with Stacey's (2007) analysis of strategy development at the corporate level. The assessment of training goals and outcomes requires organizations to utilize strategic thinking in order to align the goals and outcomes of training sessions with corporate objectives (Rackham, 2000). Several training models consider higher management responsible for setting the outcomes for sales training. The Balanced Scorecard method, developed by Kaplan and Norton (1996), assigned the responsibility of strategy translation to the organization's executives. The model utilized a cybernetic system of feedback in order to clarify the organizational objectives. Stacey (2007) noted that cybernetic systems rely on formative causality. Stacey (2007) suggested that amplifying feedback could improve the dynamics of system development. Kaplan and Norton (1996) added feedback as a basis in the development of the Balanced Scorecard model. Strategic alignment is imperative in sales force training. The goal of training management should be to align the goals of the sales trainees with the goals of the company. The use of strategic alignment in laboratory training management is essential to increasing the ability of sales trainees to make decisions that serve organizational interests. Training management can be formulated into the strategic equation through systematic development of programs in alignment with organizational objectives. This systematic approach links strategy to the requirements of the organization. Sales training requires integration of sales skills and technical knowledge.

Laboratory operations are defined by quality systems that meet international accreditation standards, such as the Joint Commission International and the College of American Pathologists accreditation. In addition to accreditation standards, operations are more reliant on emerging technologies and equipment that are connected together by a laboratory management system. Laboratory equipment suppliers, like Abbott, provide in-house training for their particular equipment. Although the laboratory equipment training is offered to only the technicians, the sales team may be able to benefit from this training. Equipment and laboratory information systems improve the efficiency of laboratory operations. These operations are reinforced by highly trained sales staff that differentiates the laboratory from its competition. The training of the sales teams in propagation of the laboratory test menu is an essential part of the management strategy. The sales team targets two client profiles: (a) healthcare facilities and (b) corporations. The ultimate goal of laboratory sales teams is to increase volumes of samples sent to the lab by clients. Additionally, some laboratories target insurance companies as potential clients. Targeting insurance companies require the sales team to be versed in the insurance system, which may differ from country to country.

Game Theory

Game theory models explain how people, or players, derive decisions when they know that their choices will affect other people, or players, in the equation. Game theory is an analysis of competition

and cooperation that branches from interdependent decision theory (Roughgarden, 2010). Five elements are considered in the game theory model: (a) a group of players, (b) strategies, (c) personal gain, (d) outcomes of every action, and (e) optimal solutions. The game theory model insinuates that individual players are decision makers (Madhani, 2010). Players utilize strategy in order to achieve outcomes that serve their interests. Strategic thinking requires players in the game to analyze possible outcomes, or payoffs that create individual or collective benefits (Ding, 2007). The goal of game theory in strategic thinking is not to win, but to find optimal strategic solutions. The player's decisions are defined as moves. Sequential moves are classified as strategy. Game theory, according to Madhani (2010), can follow two general strategies: (a) pure strategy or (b) mixed strategy. A pure strategy utilizes a fixed strategic model that is presented to the individual player. A mixed strategy utilizes random selection as a means to choosing strategy. Intrapersonal games, according to Ding (2007), require a complex mechanism that dictates the decisions taken by the players. Roughgarden (2010) corroborated this notion and further stated that the mechanisms increase in complexity based on the parameters involved in the game. Multiplayer intrapersonal games can be simplified when the goals are reduced to primitive application. Optimization can occur in different situations. The simplest of strategic game play can require logical study depending on the parameters.

Game theory modeling generally focuses on the payoff/belief model (Madhani, 2010). The belief of the player is influenced by the payoff or the expected payoff for the given decision. The complexity of the model increases with addition of various factors to the equation. Dekel and Fudenberg (1990) analyzed the effect of extensive game models and noted that only dominant strategies remained after complex iterations. Rationality is regarded as the ability to eliminate weaker strategies that yield lower payoffs. The goals of the individual can be either in self-interest or in collective benefits. Camerer (1997) considered the behavioral game theory model as a cognitive reasoning process of an individual. This model is successful when the player has the opportunity to obtain greater payoffs. Costa-Gomes, Crawford, and Broseta (1999) concluded that the player's strategic decisions are also influenced by their awareness of the game environment. If the players can assess their opponents' incentives, they will make decisions that are more reactionary. Communication plays a strong role in the establishment of player networks. The ability for players to share information through various means also influences their strategic decisions. Uncertainty, as Dekel and Fudenberg (1990) argue, is another factor that can influence the rationality behind strategic decision-making. If the payoff is uncertain, the players make cautious decisions. Combining cognitive process with uncertainty, the player molds a strategy that would yield a positive payoff.

Nash equilibrium defines optimal strategy in game theory. Nash equilibrium does not necessitate a single strategy as the optimal solution. Multiple Nash equilibria can be determined in multiplayer games. Madhani (2010) noted that Nash equilibrium is not defined as a win-lose situation. It is possible that Nash equilibrium does not provide any winners or losers, but a situation where the players receive certain benefits without causing major costs or harm to each other. Players within the multiplayer game may opt for multiple strategies in order to achieve Nash equilibrium. In this situation, a mixed-strategy approach is implemented by the player and the complexity of the game is increased. Kearns, Littman, and Singh (2001) noted that Nash equilibrium in a mixed-strategy game exists between joint mixed strategies. Rationality and logic are core factors that determine whether a strategic decision will reap expected payoffs or lower payoffs to the player or the opponents. The players should also consider whether they would achieve long-term or short-term payoffs. The decision to target long-term payoffs is dependent on the strategy chosen by the player.

Research Objective and Methodology

This purpose of this study was to analyze the decisions made by three sales trainees in a clinical laboratory in view of game theory and strategy alignment. This case study was expected to provide insight into the decision-making processes of the trainees in light of short-term payoff and long-term payoff. The objective of the study was to determine that strategy alignment is pertinent to training management. Data for this study was collected through training logs and reports by the management of a start-up diagnostic company in Saudi Arabia. The participants and organization were kept confidential to protect the identities of the participants and the organization. Data was interpreted using the client volume based on the strategy utilized by the sales trainees. The data was verified by the medical director and marketing and sales manager of the organization. The training log included details about the actions taken by the sales trainees and the results of their actions in terms of client volume. The manager described the first 6 months of business activity and trainee behavior in the logs categorized as L1 to L6. Every month had a category based on the months at the beginning of the fiscal year. A semiannual training report described the outcomes of the actions. The researcher in this study compared the outcomes of the actions to a theoretical framework of game theory.

Research Problem

The function of any sales training program is to develop the skills required for sales trainees to become effective salespeople. Organizations invest millions into development of effective sales training programs. However, sales training programs are difficult to scrutinize due to restrictions in evaluation methods, lack of empirical evidence, and managerial perceptions (Attia et al., 2002). The specific problem related to this study focused on whether the trainees fulfill the outcomes based on the goals of a traditional training program. In a study of traditional and high-tech training methods, Erffmeyer, Russ, and Hair (1992) concluded that traditional methods continue to be popular among sales managers. In this study, a traditional sales training method was used on the sales trainees. The sales trainees were taught (1) traditional sales techniques, (2) laboratory diagnostics, and (3) negotiating contracts. The research questions are as follows:

1. What are the problems associated with traditional training programs on laboratory diagnostic sales trainees in Saudi Arabia?
2. What was the rationale behind the decisions made by the sales trainees?

Data Collection and Analysis

The primary data was collected via follow-up interviews with the three sales trainees focusing on the rationale of their decision-making process. The interviews provided insight into how the trainees related their decisions to their payoffs. The three trainees were asked to explain why they pursued their chosen course of action. The interviews were recorded and transcribed using NVivo 8.0 (QSR International Pty Ltd, Australia) to analyze the data. Secondary data used in this study was obtained from managerial reports and training logs. Data from the training log described qualifications, commissions, and the training strategy. Management reports indicated the actions taken by the sales trainees in relation to contracts obtained from clients after completion of the training program. The data from training logs and management reports were logged into NVivo 8.0 for data analysis.

The researcher analyzed the data using qualitative conventional content analysis. Conventional content analysis utilizes data from texts to develop codes used for the study (Hsieh & Shannon,

2005). Training log and managerial report data was codified using the codes provided in the logs and reports. Sales volume data was studied in relation to trainee decisions. Follow-up data from interviews was coded based on the trainees' decisions and payoffs. The rationale from the interviews was used to analyze the decision-making process based on the decision tree nodes developed using data from management reports. This information provided a reference to the factors that influenced the decisions of the sales trainee participants.

Assumptions and Limitations

The researcher assumed that decisions made by the sales trainees were based on the strategies they learned during their training courses. The study is limited by the period of the case study. After obtaining experience, the sales trainees may be able to change their strategies outside of their training. Additionally, the management were not involved in the decisions undertaken by the sales trainees and did not interfere with the strategies chosen. Suggestions and intervention were withheld from the trainees during the first 6 months of sales. It was also assumed that compensation was uniform amongst the trainees regardless of their varying qualifications. Base salary was adjusted based on the experience and education of the trainees. A minimum of undergraduate qualification was assumed of the trainees. The study is limited by the number of players. Three individual trainees were studied in a nontechnical model. Adding a fourth player to the model may have changed the decisions of the players and the outcomes of the study.

Training Strategy

The training strategy used with the trainees was based on teaching basic sales techniques and diagnostic sales to medical professionals. In addition, the sales team was trained on the advanced technologies used in the laboratory with the companies that supplied the equipment. The sales teams were also well informed of the services and the competitive advantages of the laboratory over its competitors. Prior to the launch of the laboratory, the trainees spent 3 months in full-time training.

During the course of the training, the sales trainees were briefed on the more profitable diagnostics. The contracts were categorized as special testing and routine testing. The routine testing provides steady cash flow for the laboratory and is a sustainable long-term solution for the organization. The difficulty in obtaining the routine test contracts from clients is in the loss of constant cash flow for the client's organization. Hospitals and clinics often experience steady cash flow from the routine tests.

Organizational Strategy and Goals

The target revenue for the organization was 200 million Saudi riyals in the span of 5 years. In a market of 2.5 billion Saudi riyals per annum, with a growth rate of 15%, the target was feasible. The laboratory only had five competitors in the region, three of which did not have sufficient laboratory equipment to handle special tests. Several selling points were developed for the sales team to utilize with the clients. The laboratory offered walk-in patient facilities for screening tests, such as cholesterol testing for coronary artery disease, glucose for diabetes, occult blood in stool for colon cancer, and prostate specific antigens for prostate cancer. In addition, the laboratory offered clients highly sophisticated special testing, such as Her-2-neu, lymphoma markers, immunophenotyping for leukemia, and immunofixation electrophoresis for multiple myeloma. Routine tests as simple as a complete blood count were also offered in the laboratory and expected to provide constant cash flow due to the frequency and low costs of the tests. Esoteric tests that are not conducted in the laboratory would be sent to a sister lab in Dubai.

Client Distribution and Commissions

Forty-one clients in four areas make up the diagnostic market in the laboratory's operational region. The highest revenue from special and routine tests is obtained from the hospitals and specialist clinics. The most profitable special tests are obtained from histopathology and immunohistochemistry cases. As the cost of operating a histopathology lab is high, the laboratory can receive samples from 35% of hospital clients. The sales trainees were tasked with convincing hospitals to send histopathology and immunohistochemistry samples to the laboratory instead of outsourcing the tests to German and French laboratories. Only two of the sales trainees had experience in this field of special testing. The commissions from special tests, such as lymphoma markers, would yield high short-term commissions for the sales trainees. However, these cases would not yield regular commissions for the trainees.

Routine tests were the most difficult to obtain from clients. Routine tests, such as microalbumin in urine, would yield regular monthly commissions for trainees. As most hospital and clinics are equipped with in-house laboratories that are capable of running routine tests, the sales trainees faced a challenge in signing routine test contracts. Walk-in patients sent to the laboratory from physicians would have been ideal to support routine testing; however, this was the most difficult task to complete for the sales trainees because of the difficulty in convincing hospitals to outsource entire lab facilities.

Analysis of Laboratory Sales Training and Game Theory

A pure strategy based game theory model was utilized in a sales training course at a Saudi start-up laboratory. The trainees and the laboratory are kept anonymous through the course of this study at the request of the medical director of the laboratory and the senior management. Three sales employees, two males and one female, were recruited by the laboratory and required training in sales techniques and the laboratory's test menu and technology. The sales trainees, coded as ST1 through ST3, were all untrained in sales techniques. Only one of the trainees was not trained and educated in laboratory testing. The qualifications of the trainees are displayed in Table 1. A principle-agent problem is found in this case study where the trainees are able to force each other to follow a specific strategy, yet their decisions affect each other and the organization (Basu, Lal, Srinivasan, & Staelin, 1985).

Table 1: Sales Trainee Qualifications

	ST1	ST2	ST3
Sales experience	Low	Low	High
Laboratory experience	Low	High	High

The incentives for performance were presented through a base salary dependent on the qualifications and experience of the trainee, and a uniform compensation package for all the trainees. The difference in the base salaries of the sales trainees was limited to 500–1000 riyals per month. The sales trainees were aware of each other's base salaries. Additionally, the sales trainees were aware that the commission percentage is uniform throughout the company and would be divided amongst trainees who worked together in increase test samples from clients. The ultimate goal of the sales team, based on the training, was to achieve an optimal solution. The sales trainees

were given three strategies: (a) work together as a three-member team, (b) two sales trainees work together in one team and the remainder works alone, and (c) each trainee works alone. The scenarios are described in Table 2. The implementation of strategy alignment is shown when the sales trainees work together to bring in higher volumes of tests using their collective laboratory sales experience.

Table 2: Sales Strategy Scenarios

Scenario	N ₁	N ₂	N ₃
Description	Single team	Two-member team	No teams
Commission	Low	Low/high	High
Strategy alignment	High	Low	Low

The commissions obtained from the clients were based on the test volume rather than number of clients. The trainees were given the list of the 41 clients in the region to target in the first month of their training. A game tree was developed based on the possible strategies provided to the sales trainees (see Figure 1). The trainees were briefed on the possible strategies in the second month of their training. The training program had no specifications as to whether the trainees should follow a specific strategy. The choice of strategic decisions was the sole responsibility of each individual trainee.

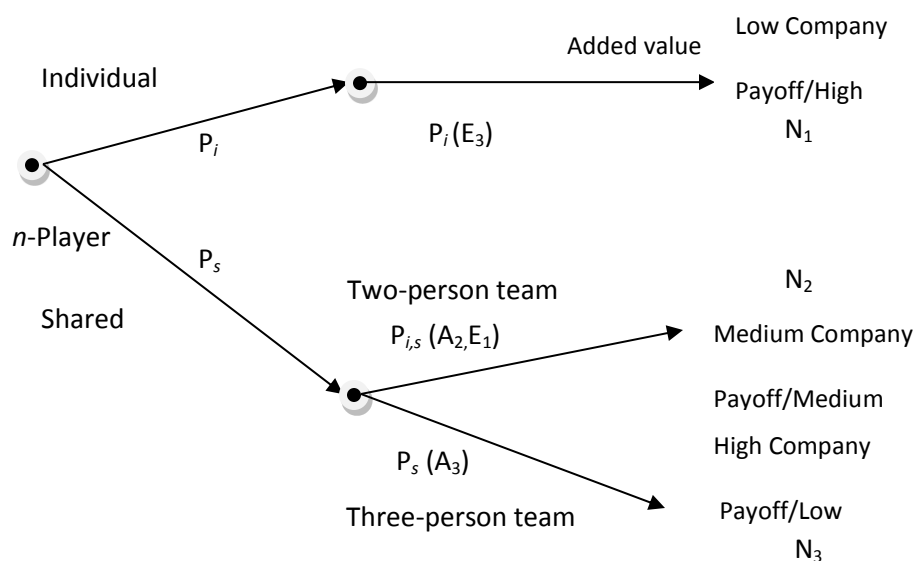


Figure 1: Game Tree of Possible Strategies

A single sales team trainee was assigned as n -player who initially was given two choices: (1) individual or (2) shared. The payoff, P , is contingent on the initial decision of the player to work individually, i , or shared, s . Individual decisions serve self-interests, E , while shared decisions lean towards company sustainability, A . The sales team was trained on the possible outcomes of the three strategies. Three nodes (N_1 , N_2 , and N_3) were the strategies and resulting payoffs. The strategies for payoffs were divided into egocentric and allocentric. An egocentric strategy intended a higher personal payoff, whereas an allocentric payoff reaped a higher company payoff. Due to the lack of experience on part of the individual trainees, clientele were reluctant to outsource their diagnostics

to the laboratory. When trainees worked together, they were able to obtain a larger percentage of business from the clientele. The possible outputs and payoffs are displayed in Table 3.

Table 3: Sales Strategy Outcomes

	N ₁	N ₂	N ₃
Egocentric payoff	High	Mid	Low
Alloentric payoff	Low	Mid	High

Scenario N₁

In the case, n -player decides to follow node N₁, he receives a higher personal payoff through commission in the short-term. Long-term personal payoff can be increased through higher volumes of diagnostics outsourced to the laboratory. In this scenario, the neighboring players must make a choice whether to work together for a lower short-term personal payoff (N₂) or to work individually, thereby maintaining node N₁. If all the players (ST1 to ST3) decide to work alone, this lowers the sustainability of the organization and lowers the profitability margin from each client. The analysis of this case can be represented as

$$P_i (E_3) > P_{i,s} (A_2, E_1) > P_s (A_3).$$

Scenario N₂

In this scenario, n -player follows node N₂, where he works together in conjunction with only one of the neighboring players. The unpaired player continues to work individually and follows the same model as n -player in N₁. This scenario yields a high personal payoff for the individual player and a low personal payoff for the two-person sales team (n -player). However, the company reaps a higher payoff from the n -player decision through an increase in test volume. The individual player lowers the company payoff and therefore yields a medium payoff for the players and the company. This scenario was the most discouraged method during the course of the training. According to the training report (2010), the sales trainees were briefed on the long-term payoff if they increased sales. This scenario is described as

$$P_{i,s} (A_2, E_1) > P_s (A_3) > P_i (E_3).$$

Scenario N₃

The final scenario is where all three sales trainees worked together in a single team. A low personal payoff is achieved by all three sales trainees as the commission is divided three ways. The company receives the highest payoff in this scenario where all sales personnel contribute their knowledge and experience to negotiate higher volumes from clients. This scenario is represented as

$$P_s (A_3) > P_{i,s} (A_2, E_1) > P_i (E_3).$$

Optimal Solution

The optimal solution was based on the Nash equilibrium concept. The concept of Nash equilibrium stated that if n -player makes a decision, i , then the other players, known as neighbors, would make the best response that will maximize personal payoff (Kearns et al., 2001). Nash equilibrium with a pure strategy is defined as

$$u_i (s_i^*, s_{-i}^*) \geq u_i (s_i, s_{-i}^*).$$

Pure strategy games can have multiple Nash equilibria. In the case of the sales trainees, a simple coordination with multiple equilibria was assumed. For the sales trainees, optimal strategy for short-term pay off would be

$$P_i (E_3) > P_{i,s} (A_2, E_1) > P_s (A_3).$$

Optimal long-term payoff, or company payoff, would be

$$P_s (A_3) > P_{i,s} (A_2, E_1) > P_i (E_3).$$

Two Nash equilibria can be determined for short-term and long-term payoffs for each player. The long-term individual payoff serves as the only optimal solution, or Nash equilibrium, for the organization:

$$(P_s [A_3] > P_{i,s} [A_2, E_1] > P_i [E_3]) > (P_i [E_3] > P_{i,s} [A_2, E_1] > P_s [A_3]).$$

The short-term individual payoff is a nonsustainable solution for the organization:

$$(P_i [E_3] > P_{i,s} [A_2, E_1] > P_s [A_3]) > (P_s [A_3] > P_{i,s} [A_2, E_1] > P_i [E_3]).$$

The optimal solution for the company requires strategic alignment of the sales trainees' decisions with the organization's objectives. Awareness of Nash equilibrium that benefits the organization does not necessitate that the course of action will be taken in favor of allocentric payoffs. Working together as a three-member team provides the organization with a higher level of sustainability, but increases personal payoff time.

Results and Outcomes

The first course of action for each sales trainee resulted in Nash equilibrium for the organization. The training manager described in log L1 that scenario N₃ was the decision undertaken by each sales trainee for the first month. Scenario N₃ resulted in the addition of three major clients and a high volume of special tests outsourced to the laboratory, routine tests were not outsourced. According to the log, L1, daily special tests were being sent to the laboratory from the three new clients. The Nash equilibrium benefitted the organization with three major clients, but left the trainees with a low payoff in the short-term:

$$(P_s [A_3] > P_{i,s} [A_2, E_1] > P_i [E_3]) > (P_i [E_3] > P_{i,s} [A_2, E_1] > P_s [A_3]).$$

This scenario was short-lived and only lasted a month. After the first month, ST1 changed strategy to N₂ and joined partners with ST3 (L2). The least qualified and experienced trainee paired with the most qualified and experienced trainee leaving ST2 to work alone. The choice of the trainees to team up was based on their understanding of the distribution of the sales commissions. The training manager described the change in strategy as a decision made by ST1 (L2). The decision to work with a single other trainee and leave the remaining trainee alone is based on

$$P_{i,s} (A_2, E_1) > P_s (A_3) > P_i (E_3).$$

This strategy was not Nash equilibrium for the trainees and the organization. The training log noted that this course of action lasted for 2 months (L2, L3). The training manager observed that ST2 felt distrust for both ST1 and ST3 (L3). ST3 did not report any feelings of being used by ST1 or opposition from ST2. The semiannual report by the training manager noted an addition of four clients with very low volume of outsourced tests (Training report, 2010). ST2 took control of one

client from the initial three as per the mutual agreement of all players. The sales volume from this client increased during this period when the client began sending special tests to the laboratory. The sales trainees concentrated more on the special tests than the routine tests as to yield higher personal payoffs in the short-term. This strategy resulted in low volumes of routine tests sent to the laboratory.

The low volumes of routine tests did not yield a high personal payoff for ST1 or ST3. During the second and third months, the organization reported low margins (Training report, 2010). The training manager recorded that ST1 and ST3 separated and began to work individually, following scenario N1. In the last 3 months, the trainees followed the Nash equilibrium for the short-term personal payoffs:

$$(P_i [E_3] > P_{i,s} [A_2, E_1] > P_s [A_3]) > (P_s [A_3] > P_{i,s} [A_2, E_1] > P_i [E_3]).$$

Data from the training report (2010) suggested that the sales trainees only became highly competitive between the second month and third months. The competitiveness of the sales trainees should have provided a rise in sales; however, the opposite was seen when the trainees exhibited competitiveness between each other with clients. Although the clients continued to send test samples to the laboratory, the training report (2010) indicated that the samples rate dropped when the trainees were competing with each other for higher sales. Sales of special tests fluctuated during this period, and sales of routine tests were at minimum.

The rate of routine tests sent to the laboratory was at zero for this period. The special test revenue was dependent on the efforts of the sales trainees. The sales trainees spent more focus on special tests in cytology, histopathology, and immunohistochemistry. Special tests that were not done in the local laboratory were being pushed as the focus of the laboratory by ST1. However, ST2 and ST3 focused on the market for common tests that can be done in-house. The sales trainees were not collaborating with each other to ensure sales of routine tests and diagnostic screenings. Microbiology tests samples were being sent to the laboratory from the first few clients in the first month. This resulted in higher revenue due to the higher price of microbiology cultures. Routine microbiology cultures would provide higher commissions for the sales team provided the hospitals continued to send culture samples taken by the laboratory staff.

As shown in Figure 2, the sales volumes for the first 6 months were affected by the strategies undertaken by the sales trainees. The first month was the most profitable month due to the three new clients and their high volumes of special testing. The collaborative efforts of the sales trainees proved successful in signing the contract with the clients for special tests. The second strategy (N₂) weakened the teams' efforts in attracting high volumes of special tests from new clients. In the span of 2 months, the sales trainees managed to add four new clients. Although the number of clients increased from an initial three clients to seven, the personal payoffs were low for the sales team. The strategy change between the second and third months resulted in a higher commission for ST2 and a divided commission between ST1 and ST3. The optimal solution for the sales trainees would have been to continue with initial low commissions from special tests and try to obtain routine test contracts for a continuous flow of income. Due to the lack of strategy alignment, the sales trainees were not able to focus their efforts on selling routine test menus and common special test menus. The focus of the sales trainees was aligned towards selling the rare tests that are not sustainable for constant laboratory operation.

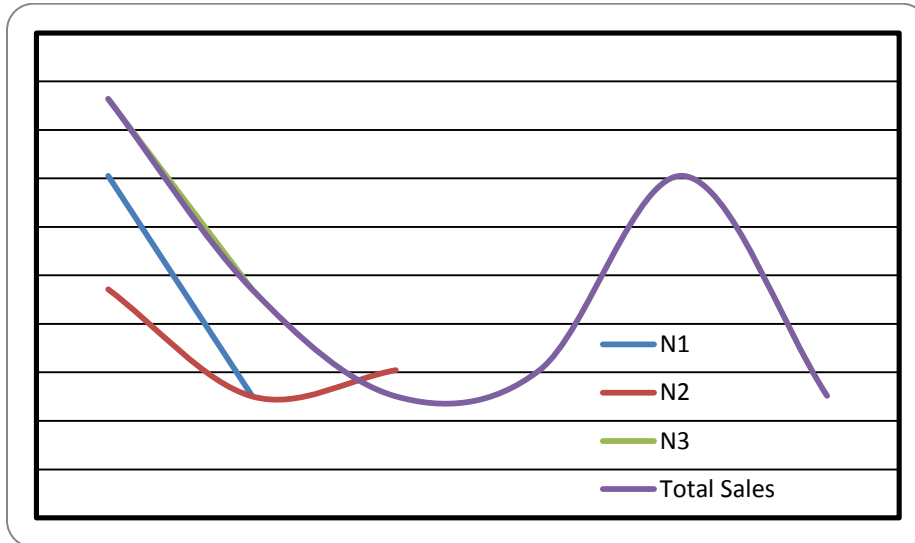


Figure 2: *Monthly Sales Volumes of New Clients*

Players' Rationale

A follow-up was conducted with the three sales trainees after a year of operation. An inquiry into the rationale behind their decisions was investigated through one-on-one private meetings. The analysis of the players' rationale is important in identifying the areas in training that require improvement. Camerer (1997) suggested that the behavioral analysis of players' decisions could lead to more effective strategy development. When applied to the training equation, the management may be able to instill the organizational goals into the players' strategic decisions. The organization's payoff will be higher when the trainees cooperate towards fulfilling the organizational objectives. As Stacey (2007) explained, implementation of systems thinking in the decision-making process improves the efficiency of strategy development. Game theory, as noted by Hamblin and Hurd (2007), is the primary means of understanding the interactions between individuals where the possibility of winning and losing is present.

Sales Trainee (ST1)

The sales trainee with the lowest experience was the most competitive player. The reason that ST1 utilized strategic partnerships to increase personal payoff was due to lack of experience in sales and laboratory operations. Although ST1 attended training in laboratory operations, she was not able to surpass ST2 and ST3 in convincing the clients to accept the laboratory contract. However, ST1 was able to communicate with the clients and arrange meetings more proficiently than ST3. ST1 felt that because she was the least experienced and educated in the team, she had to form strategic alliances with the more experienced team members. Without focusing on improving knowledge of the laboratory operations, ST1 utilized the team to obtain the initial contract with the clients. The actions of ST1 indicated a strong individualistic desire to earn payoffs. ST1's rationale for making egocentric decisions was due to the lack of integration of the organization's goals with her decision-making process. ST1 did not consider organizational goals because she felt that there was little benefit to her as she made the lowest base salary. Had the salaries been level, she would not have felt the urge to compete for higher commission. ST1 felt that the greatest difficulty in the training process was being able to understand the technical factors that differentiate the laboratory. This

difficulty was due to her inexperience in the laboratory diagnostics field. The rationale behind her collusion with the other sales trainees was for her to learn the technicalities of the laboratory.

Sales Trainee (ST2)

ST2 claimed that he was forced into sales because he was not able to obtain the license to work in the lab. Although he felt inexperienced in sales, achieving organizational success meant that he would be able to solidify his position in the company. These motives drove ST1 to develop allocentric strategies. ST1 described the discussions with ST1 and ST3 as being centered towards commissions and personal benefits “masked as team benefits.” The collusion between ST1 and ST3 convinced ST2 to improve his sales techniques by enrolling in sales courses in addition to the mandated organizational training. ST2 concerned himself with personal development and organizational payoff in order to achieve a long-term personal payoff rather than a short-term one. However, ST2’s personal goal was to achieve seniority in sales, thereby increasing personal payoff. ST2 understood that increasing company payoff would result in long-term personal payoff. ST2 had contention to how ST1 consistently teamed with ST3. ST2 described the trainee meetings as “conspiring against me.” The biggest issue faced by ST2 was the collaboration between ST1 and ST3 meant the division of the initial clients. ST2 claimed that he felt the division was not an even distribution of commission.

Sales Trainee (ST3)

From the three sales trainees, ST3 was the most qualified and the highest paid. ST3 felt that his decisions were not egocentric as he was “helping the sales team with his expertise.” ST3 did not consider long-term payoffs as a factor in his decision-making process. Even though ST3 stayed closer with ST1, he felt that he would have been better off with a “less competitive individual who can learn from him.” ST3 perceived that ST1 was not as competitive as ST2 due to ST2’s persistence to work as a complete team. ST3 did not trust ST2’s motives. “I felt that he was trying to take most of the clients himself.” ST3 claimed that ST2’s efforts were too forward and were not allocentric.

Recommendations and Further Research

Recommendations for Training Managers

Training managers in small and large companies should focus their programs on organizational strategy alignment. Avoiding the issue of goal alignment may cause trainees to make decisions that only reap personal payoffs rather than company payoffs. Organizations may offset the decision to achieve personal payoffs by restructuring the commission system or by motivating trainees to target decisions that provide higher company payoff. The difficulty in this task, as mentioned before, is encouraging the trainees to put the company as their guidance for decision-making.

A possible solution to discouraging sales trainees to make decisions that do not support the company objectives is to provide greater incentive for higher company payoff. As suggested by Madhani (2010), sales force compensation creates competition that may have repercussions on the company’s intended sales targets. The suggestion based on this study is that companies should not try to incentivize trainees after completion of their training programs, but to integrate organizational strategy alignment into the training programs to instill the decision prior to completion of the training program. The results of this study provide a fundamental understanding of cognitive thinking with sales trainees that are set up to compete with each other. Competition may cause the trainees to make decisions that lower the organizations sales revenue.

Recommendations for Future Research

Goal and strategy alignment in sales training is a field that requires more research. Research into the long-term effects of strategy alignment in sales training on profitability should be studied over a longer period. As is the case with empirical research, this study was limited by 6-month data collection period. The organization, being a start-up, required heavier investment into marketing campaigns, which did not take place. This factor made the task of the sales team more difficult as the laboratory was yet to establish rapport in the local medical industry. Companies that are well established may experience different results with sales training due to the status of the company's reputation. Only new clients were considered in the study, as the organization was new to the market. Organizations that have long-term clients may experience different results with the sales trainee strategies. Research into established companies may further strengthen the idea that goal and strategy alignment is pertinent in training programs.

Research into organizational strategy alignment and sales training methodology can provide companies with a guidance towards implementing proper programs that effectively teach sales trainees how to make decisions with the optimal solutions that benefit the company and the trainee in the long-term (Marshall & Michaels, 2001). Research in different industries is recommended as to strengthen the case behind implementing strategy alignment in training programs. Start-up companies may benefit from research into sales training in start-up organizations. Further research into different industries and region specifics should be conducted. The differences in culture may also influence the results of research. Research into cultural differences in training programs would strengthen the literature in the training management field.

Conclusions

The final decision made by the trainees was to follow a short-term personal payoff. This decision was not in favor of the corporate strategy. A failure to align the corporate strategy with sales strategy can be assumed based on the final decision of the trainees. Moore and Seidner (1998) suggested that the organization's success is dependent on the ability of both organization and employees to learn and adapt. Training intervention is required in order to guide trainees to a strategy that would benefit the corporate strategy as well as the individual trainees. Organizations must create strategic alignment training methods in order to convince trainees to make decisions that would benefit the organization as well as create a suitable payoff for the sales team. The trainees involved in this case study followed an egocentric strategy for the majority of the analysis. This was due to a lack of strategic alignment in their decisions.

The investigation into the rationale of the players in the study revealed that increasing competitiveness between sales trainees could have repercussions to the organization's payoffs. When the competition between trainees increases, there is a stronger chance that the players, or trainees, may sabotage each other's efforts in order to increase their personal gain. In order to obtain organizational success, the management must place a stronger focus on team building and cooperative decision-making. The players in the study lacked trust between each other and with the organization. The mistrust could have been offset by team building training.

Strategic alignment is an essential aspect of organizational success. Creating a training module solely related to strategic alignment would be a probable solution to the sales trainee dilemma. There is evidence that suggests that companies can create an effective sales force by strategic training (Attia et al., 2005). Organizations must prioritize their training agendas and consider the effects of strategic alignment on their sales trainees. Awareness is not sufficient to ensure that

trainees would take a specific course of action. The actions of the sales trainees in this case study can testify to the need to prioritize strategic alignment in laboratory sales training.

References

- Attia, A. M., Honeycutt Jr., E. D., & Leach, M. P. (2005). A three-stage model for assessing and improving sales force training and development. *Journal of Personal Selling & Sales Management, 25*, 253–268.
- Basu, A., Lal, R., Srinivasan, V., & Staelin, R. (1985). Sales force compensation plans: An agency theoretic perspective. *Marketing Science, 4*, 267–291.
- Camerer, C. (1997). Progress in behavioral game theory. *Journal of Economic Perspectives, 11*, 167–188.
- Costa-Gomes, M., Crawford, V., & Broseta, B. (1999). *Cognition and behavior in normal-form games: An experimental games*. Mimeo.
- Cron, W. L., & DeCarlo, T. E. (2009). *Dalrymple's sales management*, 10th ed., Hoboken, NJ: John Wiley & Sons.
- Dekel, E., & Fudenberg, D. (1990). Rational behavior with payoff uncertainty. *Journal of Economic Theory, 52*, 243–267.
- DeSmet, A., McGurk, M., & Schwartz, E. (2010). Getting more from your training programs. *McKinsey Quarterly, 4*, 101–107.
- Ding, M. (2007). A theory of intraperson games. *Journal of Marketing, 71*, 1–11.
- Erffmeyer, R. C., Randall Russ, K., & Hair Jr, J. F. (1992). Traditional and high-tech sales training methods. *Industrial Marketing Management, 21*, 125–131.
- Hamblin, S., & Hurd, P. L. (2007). Genetic algorithms and non-ESS solutions to game theory models. *Animal Behaviour, 74*, 1005–1018.
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research, 15*, 1277–1288.
- Honeycutt, E. D., Howe, V., & Ingram, T. (1993). Shortcomings of sales training programs. *Industrial Marketing Management, 22*, 117–123.
- Ingram, T., LaForge, R., Avila, R. A., & Schwepker, C. H. (2006). *Professional selling: A trust-based approach*. Mason, OH: South-Western.
- Kaplan, R. S., & Norton, D. P. (1996). Using the balanced scorecard as a strategic management system. *Harvard Business Review, 7*, 75–85.
- Kearns, M., Littman, M., & Singh, S. (2001). Graphical models for game theory. *Proceedings of the Conference on Uncertainty in Artificial Intelligence*. 253–260.
- Madhani, P. M. (2010). Salesforce compensation: Game theory. *SCMS Journal of Indian Management, 7*, 72–82.
- Marshall, G. W., Michaels, R. E. (2001). Research in selling and sales management in the next millennium: An agenda from the AMA faculty consortium. *Journal of Personnel Selling & Sales Management, 21*, 15–17.
- Menguc, B., Auh, S., & Uslu, A. (2013). Customer knowledge creation capability and performance in sales teams. *Journal of the Academy of Marketing Science, 41*, 19–39. doi: 10.1007/s11747-012-0303-8.

- Moore, C. A., & Seidner, C. J. (1998). Organizational strategy and training evaluation. *Evaluation in Education and Human Services, 46*, 19–40.
- Powers, T., DeCarlo, T., & Gupte, G. (2010). An update on the status of sales management training. *Journal of Personal Selling & Sales Management, 30*, 319–326.
- Rackham, N. (2000). Face-to-face selling is more important than ever. *Sales & Marketing Management, 153*, 34–38.
- Roughgarden, T. (2010). Algorithmic game theory. *Communications of the ACM, 53*, 78–86.
- Shepherd, D. C., Gordon, G. L., Ridnour, R. E., Weilbaker, D. C., & Lambert, B. (2011). Sales manager training practices in small and large firms. *American Journal of Business, 26*, 92–117.
- Stacey, R. (2007). *Strategic management and organizational dynamics*. Essex, England: Pearson Educational Limited.
- Training Report. (2010). GML diagnostics training report. *Medical Solutions*. Al-Khobar, Saudi Arabia.

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