Augmenting Engagement and Learning via Decision Support

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ABSTRACT

Based on learning and engagement theory, this paper provides evidence on behavioral and affective (perceptual) engagement among competing simulation team members as well as value-added to the learning experience with the use of decision support systems (dss). Behavioral evidence on engagement includes aggregate download statistics of online dss packages, dss package demo videos (suggested by students), and dss-related articles. Affective (perceptual) engagement evidence on dss package effectiveness and value-added to the user learning experience includes individual participant survey responses on dss package usage, usefulness, effectiveness, usage experience, and value-added to the learning experience. The results suggest that (a) dss-induced user autonomy, relatedness and competence foster engagement. Further, complex heavy workload demands under time pressure can be offset by range of decision-making freedom and the amount of support provided.

INTRODUCTION

The AACSB International mission, stated in *2020 Guiding Principles and Standards for Business Accreditation* (last revised July 1, 2021), is "to foster engagement, accelerate innovation, and amplify impact in business education." Accordingly, AACSB accreditation requires evidence of continuous quality improvement in engagement, innovation and impact. Accreditation Standard 4.4 on Curriculum, states "the school's curriculum facilitates meaningful learner-to-learner and learner-to-faculty academic and professional engagement." (AACSB International, 2020a). AACSB International provides interpretive guidance on Standard 4: Curriculum:

> "Engagement should facilitate and encourage active student engagement in learning. In addition to the time on tasks related to readings, course participation, knowledge development, projects, and assignments, learners engage in experiential and active learning designed to be inclusive for a diverse student body, and to improve skills and the application of knowledge in practice."

In addition, "Standard 4 specifically addresses the need for learners to be agile with current technologies and possess technological agility" (AACSB International, 2020b).

This paper reports on current efforts to (a) foster and track evidence on engagement, (b) accelerate innovation via co-creation of user-perceived value, based on student suggestions, (c) amplify impact on learning via the introduction and use of interactive online graphics packages as well as Excel-based decision support systems (dss) packages tied to the simulation results in a problem-based learning (PBL) environment.

When reviewing business school accreditation applications, the AACSB International criteria for evaluating student engagement, include (a) students give the appropriate attention and dedication to the learning materials, and (b) maintain their engagement with these materials even when challenged by difficult learning activities. In addition, the curricula include approaches that actively engage and include all students in learning. Pedagogical approaches suitable for challenging students in this way include problem-based learning projects and simulations (AACSB International, 2013). Faced with challenging learning activities, students are willing to invest personal, internal energies regardless of task difficulty. Kahn (1990) asserts that this investment of resources results in physical, cognitive, and emotional dimensions of engagement that produce active, full performance as demonstrated by attendance, performance and student products. AACSB International recommends that educational institutions applying for accreditation document (a) curricula approaches that actively engage and include students in academic learning, and (b) outcomes of the learning process in the form of projects, papers, presentation, examination performances, and other demonstrations of learning in order to demonstrate clear evidence of active student engagement in learning (AACSB International 2013).

The primary purpose of this paper is to explore the use of decision support systems (dss) to augment engagement and learning in an experiential learning environment. First, the literature on experiential learning and engagement theory is briefly reviewed. Next, the usage of business simulations and dss in experiential learning is appraised. Then, a brief description of the simulation is followed by evidence on resulting engagement and value-added to the learning experience. Behavioral engagement evidence includes aggregate download statistics of online (a) dss packages, (b) dss package demo videos (suggested by students), and (c) dss-related ABSEL articles. Affective (perceptual) engagement evidence on dss package impact on the user learning experience includes individual online Qualtrics survey responses on dss package (a) usage, (b) usefulness, (c) effectiveness, (d) pros and cons, and (e) value-added to the learning experience.

ENGAGEMENT AND EXPERIENTIAL LEARNING

Active student engagement is fostered through experiential learning. Experiential learning involves learning through experience via cognitive and affective involvement of the whole person (Hoover 1974). It is the result of cognitive, affective and behavioral engagement (Hoover & Whitehead 1975). In addition, it is "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb 1984). Experiential learning is an active form of learning that requires student engagement and leads to student learning outcomes (Burch et al. 2014).

Kolb (1984) proposes that experiential learning has six main characteristics. First, learning is best conceived as a process, not in terms of outcomes. Second, learning is a continuous process grounded in experience. Third, learning requires the resolution of conflicts between opposed modes of adaptation to the world (learning is by its very nature full of tension). Fourth, learning is a holistic process of adaptation to the world. Fifth, learning involves transactions between the person and the environment. Sixth, learning is the process of creating knowledge that is the result of transaction between social knowledge and personal knowledge (Kolb 1984). Further, in order to transform experience into knowledge, it is necessary to (a) involve the whole person (intellect, feelings, and senses) in learning, (b) use relevant life and learning experience, and (c) reflect on the learning experience (Kolb, 1984, Magnuson & Good 2017). Experiential learning requires self-initiative, an intention to learn, and an active phase of learning (Moon 2004). In experiential learning, the individual is encouraged to (a) directly involve themselves in the experience, (b) reflect on their experience using analytical skills, (c) gain a better understanding of the new knowledge, and (d) retain the information for a longer time (Winsett et al. 2016).

Rahn (2009) suggests that student engagement is evident when there is a competitive team spirit, discussion and debate within the team. He asserts that the importance of student engagement in education is a function of the simulation and educational environment. In order to stimulate student engagement and augment experiential learning, instructors can provide students with goal oriented and engaging tools (Miller 2013). Further engagement is strengthened when students are presented with focused goals, challenging tasks, an authentic and compelling story, and a degree of novelty. Students in simulation enhanced courses have identified goal setting, information processing, organization and interpersonal skills, sales forecasting, entrepreneurial skills, financial analysis, economic conceptualization, inventory management, mathematical modeling, hiring, training, motivation, enhanced creativity, communication skills, data analysis, strategic planning, and other skills as part of the learning experience (Wellington & Faria 2006).

STUDENT ENGAGEMENT

Student engagement is viewed as a multidimensional meta-construct, consisting of three types of engagement – behavioral, emotional, and cognitive (Axelson & Flick 2011). Yet, the observable part of engagement may not be a valid indicator of true student engagement. Students who appear to be curious about or interested in a subject or who display other outward signs of engagement may not acquire knowledge about the subject. Other students who do not display signs of physical engagement may still be learning (Winsett et al 2016).

Engagement is a multi-dimensional phenomenon that includes behavioral and affective components. It includes "initiation of action, effort, and persistence in schoolwork, as well as ambient emotional states during learning activities" (Handelsman et al 2005, Skinner et al 1990). In addition, it "is grounded in the cognitive and affective systems of learners and readers" (Mosenthal 1999, Handelsman et al 2005, Hoover & Whitehead 1975). Some scholars note that engagement has an interpersonal component, given that interactions with teachers and other students can be an important part of the classroom experience (Connell & Wellborn 1991, Deci, Cornell & Ryan 1985, Guthrie & Anderson 1999, Handelsman et al 2005, Skinner & Belmont 1993). In addition, social interaction patterns in the

classroom can amplify or constrict students' intrinsic motivations, their use of self-regulated strategies, and their attainment of deep conceptual knowledge (Guthrie & Anderson 1999, Handelsman et al 2005, Winsett et al. 2016).

Social learning, also called "collaborative" or "cooperative" learning is defined as acquiring knowledge as a group (Bandura 1977). It involves observing how others in the group act, observing consequences, and acting to modify individual behavior. The role models observed by learners are extremely influential in this process (Bandura 1977). Students must be active learners first, in order to take advantage of social learning: both active learning and social learning are more student-driven than traditional college lectures (Perkins 1999). Winsett et al (2016) demonstrated a positive relationship between group experiential learning activities and student engagement. Their research supports the use of Social Learning Theory to facilitate classroom engagement. Individuals in a group setting observe others in the same group, noting specifically how they act and the resultant consequences associated with it, and then modify their own behavior, thus increasing their own level of engagement. Their research results reveal that (a) group discussions drives physical engagement, (b) group projects drive emotional engagement, and (c) having a variety of group work drives cognitive out of class engagement in addition to emotional engagement. Further, student engagement can facilitate authentic learning, and enhance the development of skills, habits and rituals that augment the capacity for continuous learning and personal development. In addition, student engagement factors such as level of academic challenge, active and collaborative learning, student-faculty interactions, and supportive campus climate are significantly correlated with GPAs (Carini et al. 2006, Luthans et al. 2016).

Effective engagement needs to address underlying psychological variables such as the needs for (a) autonomy, (b)

relatedness, and (c) competence (National Research Council 2003). The job demand control support (JDCS) model (Karasek 1979, Karasek et al 1982) postulates that psychological strain results from the joint effects of (a) the demands of the work situation, (b) the range of the decision-making freedom to face those demands, and (c) the amount of support provided. Job demands are psychological stressors such as (a) time pressure, (b) heavy work load, (c) ambiguity, and (d) role conflict. Job control concerns the individual's potential control over work tasks and is composed of (a) decision authority, and (b) skill discretion. The degree of (a) autonomy, (b) flexibility and (c) discretion in choosing the timing and methods for performing the tasks, as well as the variety and creativity in skill usage affect the degree of control. In addition, the learning environment affects engagement via decisions on (a) how well the material is presented, (b) which learning activities are used, and (c) what kinds of feedback are provided.

Geddes et al (2015, 2018) draw on service-dominant logic (Vargo & Lusch 2004, 2014) to conceptualize co-creative strategies in experiential learning. Co-creation of value in experiential education via the combination of diverse (a) course operant resources such as lectures, and/or in-class or out-of-class exercises, (b) teacher and administrator operant resources such as emotional energy and attitude, and (c) student willingness to apply or withhold their operand resources (such as notebook computers) can lead to a range of potential educational outcomes.

PROBLEM BASED LEARNING

Student engagement and learning is stimulated via problem-based learning (PBL) pedagogy, that is founded on the premise that answers flow from problems. PBL prompts students to recognize their knowledge limitations, and motivates them to learn. The learning process begins by presenting the learner with an engaging problem. As students explore the problem, they discover how course concepts provide the means for resolving the problem (Anderson & Lawton 2004). PBL provides students with opportunities to (a) examine the experiment with what they already know; (b) discover what they need to learn; (c) develop the people skills they need for improving their performance in a team setting; (d) improve their writing and speaking abilities by learning to state and defend with sound arguments and evidence their own ideas, and (e) become more flexible in their approach to problems. It gives students the opportunity to identify the ideas and skills they need to work through the problems they confront (Spence 2001). A PBL problem should (a) engage student interest, and (b) require students to develop and implement the principal concepts of the course in order to successfully solve the problem (Duch et al. 2001).

SCAFFOLDING

Engagement and learning can be enhanced via scaffolding, which provides support to allow learners to learn for themselves. Scaffolding provides individual students with intellectual support so they can function at the cutting edge of their cognitive development (Hogan and Pressley 1997). Simulation participants experiment with different product, pricing, promotion, and distribution strategies in order to improve their performance. Based on a situation analysis, they formulate a mission, set goals, develop a marketing program consisting of individual marketing strategies and plans, monitor performance, identify deviations from preset goals, understand the underlying reasons, take corrective action, and thereby exercise marketing control. Phased simulation debriefing, using a problem-based learning approach, serves as a scaffolding device to respond to team needs as problems arise. This approach enhances learning throughout the semester, and provides support to permit simulation participants to learn for themselves. Simulation participants take increased control of their learning as they experience both success and failure, and as they commit and learn from their own mistakes and the errors of their competitors.

ARGYRIS' ORGANIZATIONAL INTERVENTION MODEL

Lasting commitment to organizational change and personal developmental learning is facilitated by the three sequential steps of the Argyris' model: (a) generation and use of valid information, (2) free, informed choice based on the information produced, and (b) the consequent outcome of internal commitment to organizational change and personal developmental learning (Argyris, 1970, 1971; Hoover et al., 2016). Based on the Argyris model, lasting commitment to organizational change and personal developmental learning are unlikely if valid information generation and free, informed choice are not present. Consequently, recent trends in complexity avoidance and narcissism may hinder the process of personal developmental learning. The challenge is to get potential learners aligned with the information relevant to their learning. Failure to do so will result in simulation participants making decisions based on incorrect, faulty, or incomplete information. Narcissists are particularly challenged to generate and use valid information. Consequently, they tend to resist organizational change and personal developmental learning (Hoover et al., 2016). Based on the Argyris' model, dss packages are used to extract valid information from the simulation results and facilitate better-informed decision-making.

This paper reports on the regular use of a wide array of dss packages to extract valid information from simulation results to facilitate decision making. Simulation participants are able to freely access (24/7) and use specific dss packages to extract and analyze relevant data from the simulation results in order to make better-informed decisions on target profit pricing, forecasting, market segmentation and positioning, market mix analysis, competitor analysis, forecast error impact analysis, ratios analysis, cash flow analysis, and strategic market planning. They are committed to improving team performance, and personal developmental learning, which stimulates academic engagement.

BUSINESS SIMULATIONS & EXPERIENTIAL LEARNING

Business simulations engage students' interest and are preferred by students when compared to cases and lectures in order to learn course concepts (Wolfe 1985; Washbush & Gosenpud 1991). In addition, they have been used to apply course concepts

(Anderson & Lawton 1997; Green & Faria 1995; Hemmasi & Graf 1992; Miller et al. 1998; Schellenberger et al. 1989; Teach & Govahi 1988; Wolfe 1990). Simulations have been used to (a) present concepts, and (b) provide students with an opportunity to experiment with and apply those concepts (Keys and Wolfe 1990). Consequently, simulations provide the opportunity to use PBL to illustrate and apply important concepts in business courses. Yet, instructors need to consider the scope of the simulation, the student level of preparation as they begin the course, and the objective in using the simulation prior to using a PBL approach (Anderson & Lawton 2004, 2005).

Experiential training has several benefits, including (a) improved transfer of learning to the work venue, (b) well-suited for teaching participants how to respond to change, (c) relatively risk-free environment, (d) higher participant involvement and motivation, (e) ability to simultaneously manipulate several variables, and (f) immediate feedback (Hoberman and Mailick, 1992; Geber, 1994), (g) ability to teach teamwork and problem solving (Hemmasi and Graf, 1991), (h) unique contribution to the managerial skill set (Teach and Govahi, 1993), and (i) close relationship between business game experiences and outcomes such as income and organizational position (Wolfe and Roberts, 1993). Yet, experiential training has potential drawbacks including (a) synthetic experiences are different from the real world, (b) simulations may lack the realism necessary to motivate participants, (c) debriefing may be poorly conducted, and (d) participants may make hasty generalizations based on a single experience (Hoberman and Mailick, 1992; Geber, 1994). However, experiential learning is ideal for teaching business strategy (Thomas, 1998; Kayes, 2002). Strategy simulations facilitate complex functional integration. Participants analyze data, identify and solve problems and make decisions (Keys and Wolfe, 1990). Simulations expose students to complex managerial decisions in a simulated environment that reflects real life (Parks and Lindstrom, 1995).

SIMULATION PROS AND CONS

While managerial concepts are better understood via simulations (Gopinath and Sawyer, 1999; Zantow et al., 2005), cases remain the primary method for teaching business strategy, as simulations have shortcomings from both teaching and learning perspectives. Simulations are costly pedagogical tools (Keys and Wolfe, 1990) which cost the school and students extra fees. Instructors need additional time and effort to learn the simulation, brief students, run the simulation, analyze results, debrief students, and answer questions. Educators using simulations may experience control problems (Kachra and Schnietz, 2008) such as inability to guide students under time pressure, or when facing unforeseen situations resulting from hyper-competition. This may decrease the professor's reputation and have a negative impact on teaching evaluations.

Thought provoking simulation games help instructors to stimulate students' interest in the learning material. They generate involvement and enthusiasm in the learning process and stimulate cognitive, affective and behavioral engagement. Yet, over-emphasis on the simulation may disrupt learning objectives as participants attempt to decode the simulation algorithm rather than understand the nature of the relationships among different elements in strategic decision making. While simulations (a) foster the development of decision-making skills under time pressure in a dynamic, complex and uncertain environment, (b) increase computer skills, (c) develop team building, and (d) increase negotiation skills (Knotts and Keys, 1997), these are auxiliary skills, not core objectives of the strategy course. Another limitation is the automatic provision of financial statements and other data reports. Students need to know how the simulation model processes their decisions and the basis on which their financial statements and data reports are prepared. Some decisions such as overdraft loans are made by the simulation without any financial planning by the participants. Strong performance on the simulation may not reflect mastery of skills needed to manage a firm. Weak performance, on the other hand, does not necessarily imply failure to learn (Wolfe, 1997). Finally, as simulation complexity increases in order to more closely reflect reality, learning from the experience becomes more challenging (Wheatley et al., 1988).

Despite these drawbacks, simulation games help participants experience and learn about managing organizations. They are used in most degree programs (Faria, 1998, 2001; Keys & Wolfe, 1990; Lane, 1995; Thompson, Purdy & Fandt, 1997). Carefully crafted team-based business simulations, unlike lectures and business cases, enable students to confront the complexity, ambiguity, and interpersonal tension that exist in real-life management. They are, in effect, live cases that participants and instructors can subsequently analyze and discuss to deduce principles that they can apply in future (Rollag & Parise, 2005). Strategy simulations effectively introduce business concepts, instill a cross-functional understanding of business, build team skills, enable better translation of data into information, and improve decision-making skills (Kulkarni & Sivaraman, 2013). Participants can develop leadership, decision-making and effective communication skills (Silas et al., 2009). They often lead to superior learning outcomes compared to other training methodologies (Wolfe 1997).

LEARNING VIA BUSINESS SIMULATIONS

The experiential learning process involves active experimentation, concrete experience, reflective observation, and abstract conceptualization (Kolb, 1984). Reflection is a key component of the learning process, as simulation participants learn from reflecting on the experience, not from the experience itself (Thiaragajan, 1994). In addition, learning involves both analysis by participants and input from the instructor, and has added impact with adequate processing time and a cognitive map for understanding the experience (Bowen, 1987). In a simulation, reflection involves (a) participants receiving feedback (simulation results based on decisions), (b) contemplation of the results, (c) debriefing process with team members, competitors, and the instructor/administrator, and (d) analysis/planning process resulting in plans, reports, and/or presentations (Gosen, 2004).

The value of experiential learning via business simulations is illustrated with Bloom's taxonomy of educational objectives in the cognitive domain (Bloom, 1956; Grondlund, 1970), which relies on a mastery learning approach

(Bigge, 1982). The six-level hierarchical classification system, moves from simple to more complex levels of cognitive development: knowledge, comprehension, application, analysis, synthesis, and evaluation.

First, participation in a complex marketing simulation requires the student's ability to operate at the taxonomy's "knowledge" level. Participants choose and recall appropriate functional knowledge in marketing, accounting, corporate finance, management and other functional areas to process the information in the simulation manual, decisions and results. Next, participants use the recalled functional knowledge of marketing to "comprehend" the information provided in the simulation manual about their past performance, cost of production, products, product life-cycle stages, and regional markets. In addition, they "comprehend" the demographic, psychographic, media and purchase behavior characteristics of the consumers in each region. Third, simulation participants set goals, formulate strategy, forecast demand, and plan, implement and control their marketing program. They introduce and "apply" theories on segmentation, targeting, differentiation and positioning, and elements of the marketing mix to compete effectively. Then, participants "analyze" their customers, product markets, competitors, and non-controllable marketing environments. Based on this analysis, they make decisions in a dynamic, complex and uncertain environment under time pressure, and analyze simulation results. They classify and break down their results by product, by market, and by strategic business unit (SBU), in order to better understand and improve the performance of their company. Fifth, based on their preceding analysis of the results as well as external research on the customers, market and environment, simulation participants "synthesize" information collected from diverse sources to create, communicate, distribute and capture value from targeted heavy-user market segments. They develop a marketing program for their product portfolio, prepare a strategic market plan report, and present a comprehensive company report and proposed marketing plan. Finally, simulation participants use marketing dss packages to forecast demand, price, position, and develop strategic roles for each SBU in their SBU portfolio. In addition, they monitor and "evaluate" their performance relative to goals, identify deviations in performance, understand the underlying reasons for subpar performance, and take corrective action. They identify problems, select appropriate dss packages to investigate underlying reasons for sub-par performance, and develop and prioritize action steps in order to improve company performance.

DECISION SUPPORT SYSTEMS

Several scholars have commented on the value of including decision support software/systems in computer simulations (Keys and Biggs, 1990; Teach, 1990; Gold and Pray, 1990; Wolfe and Gregg, 1989). In addition, the literature is replete with references to the use and impact of decision support systems with computer simulations (Affisco and Chanin, 1989, 1990; Burns and Bush, 1991; Cannon et al., 1993; Fritzsche et al., 1987; Grove et al., 1986; Halpin, 2006; Honaiser and Sauaia, 2006; Markulis and Strang, 1985; Mitri et al., 1998; Muhs and Callen, 1984; Nulsen et al., 1993, 1994; Palia, 1989, 1991, 2006, 2009; Peach, 1996; Schellenberger, 1983; Shane and Bailes, 1986; Sherrell et al., 1986; Wingender and Wurster, 1987; Woodruff, 1992).

Decision support systems (dss) are defined as …a collection of data, systems, tools, and techniques with supporting software and hardware by which an organization gathers and interprets relevant information from business and environment and turns it into a basis for…action (Little, 1979; Burns and Bush, 1991). In addition, they are defined as computer-based information systems that support the process of structuring problems, evaluating alternatives, and selecting actions for more effective management (Forgionne, 1988). Further, they are described as the hardware and software that permit decision-makers to deal with a specific set of related problems by providing tools that amplify a manager's judgment (Sprague, 1980).

DSS used with business simulations yield several benefits. These benefits include (a) greater depth of understanding of simulation activity with resulting increase in planning (Keys et al., 1986), (b) in-depth understanding of quantitative techniques as students visualize the results of their applications, (c) sensitivity to weaknesses in techniques used, and (d) experience in capitalizing on their strengths (Fritzche et al., 1987). Other benefits include (a) minimization of paperwork and errors, (b) error-free graphical representation of output, (c) a competitive tool with increasing value as simulation progresses, and (d) potential for participants to create their own dss (Burns and Bush, 1991). In addition, dss enhance understanding of complex business relationships and provide additional value over time (Halpin, 2006). Further, they provide realism, relevance, literacy, flexibility and opportunity for refinement (Sherrell et al., 1986).

Some authors contend that combining an active student generated database in the form of a simulation game with a dss will result in improved decision making, lead to improved pro-active rather than re-active strategic planning, and result in improved simulation game performance and enhanced learning (Muhs and Callen, 1984). Others have reported no support for the premise that dss usage improves small group decision making effectiveness (Affisco and Chanin, 1989), and that dss usage to support manufacturing function decisions resulted in decreased manufacturing costs and increased "earnings/cost of goods sold" ratio in the second year of play (Affisco and Chanin, 1990).

Several authors have investigated the relationship between game performance and use of dss (Keys & Wolfe, 1990) as well as other predictor variables such as (a) past academic performance (GPA) and academic ability of participants, and degree of planning and formal decision making by teams (Faria, 2000), (b) GPA and the use of dss (Keys and Wolfe, 1990), (c) age, gender, GPA and expected course grade (Badgett, Brenenstuhl & Marshall, 1978), (d) university GPA and academic major (Gosenpud & Washbush, 1991), (e) gender, GPA and course grade (Hornaday, 2001; Hornaday & Wheatley, 1986), (f) gender (Johnson, Johnson & Golden, 1997; Wood, 1987), (g) GPA, previous course grades, and course grade (Lynch and Michael, 1989), with conflicting results. These conflicting results led to the conclusion that no predictor variable consistently predicts simulation performance (Gosenpud, 1987). Given the inconsistent findings with regard to the efficacy of dss reported in the literature, does dss usage increase decision effectiveness and/or enhance learning? Schellenberger (1983) notes that while the dss assists the decision maker, it

does not make decisions, nor can it substitute for intelligent analysis and synthesis. In addition, as with other computer-based or experiential learning techniques, the effectiveness of dss or the decisions made are less important than the insights they generate. The level of insight generated depends heavily on the clear explanation of the purpose, significance, assumptions, usage, and limitations of the dss and underlying concepts applied, by the instructor. In addition, the level of insight generated depends heavily on the debriefing process used by the instructor to crystallize student learning (Cannon et al., 1993).

This paper presents both objective behavioral and affective (perceptual) evidence on dss usage by simulation participants. Participants have 24/7 access to a wide array of dss packages that include (a) interactive online positioning and strategic market planning graphics packages that reflect team performance results, and (b) Excel-based dss workbooks that extract and present decision and performance data from simulation results. The dss packages are used by participants in market segmentation, targeting, differentiation, positioning, pricing, demand forecasting, manufacturing/shipping, forecast error tracking, budgeting, cash flow analysis, monitoring performance, analyzing performance, and strategic market planning. The dss packages are progressively introduced and demonstrated during the course of the simulation competition. The purpose, significance, assumptions, usage and limitations of each dss package are covered. Participants access, download and use the dss packages when needed to (a) formulate strategy, (b) make decisions, and (c) monitor, analyze, and improve team performance results. They include and refer to screenshots of the dss packages in their individual reports and team presentation. The results suggest that (a) dss-induced user autonomy, relatedness and competence foster engagement. In addition, heavy workload demands under time pressure on simulation participants can be offset by range of decision-making freedom and the amount of support provided.

COMPETE MARKETING SIMULATION

COMPETE (Faria, 2006) is a marketing simulation designed to provide students with marketing strategy development and decision-making experience. Competing student teams are placed in a complex, dynamic, and uncertain environment. The participants experience the excitement and uncertainty of competitive events and are motivated to be active seekers of knowledge. They learn the need for and usefulness of mastering an underlying set of decision-making principles. Competing student teams plan, implement, and control a marketing program for three high-tech products in three regions Region 1 (R1), Region 2 (R2) and Region 3 (R3) within the United States. These three products are a Total Spectrum Television (TST), a Computerized DVD/Video Editor (CVE) and a Safe Shot Laser (SSL). The features and benefits of each product and the characteristics of consumers in each region are described in the student manual. Based on a marketing opportunity analysis, a mission statement is generated, specific and measurable company goals are set, and marketing strategies are formulated to achieve these goals. Constant monitoring and analysis of their own and competitive performance helps the teams better understand their markets and improve their decisions.

Each decision period (quarter), the competing teams make a total of 74 marketing decisions with regard to marketing their three brands in the three regional markets. These decisions include nine pricing decisions, nine shipment decisions, three sales force size decisions, nine sales force time allocation decisions, one sales force salary decision, one sales force commission decision, twenty -seven advertising media decisions, nine advertising content decisions, three quality-improvement R&D decisions, and three cost-reduction R&D decisions. Successful planning, implementation, and control of their respective marketing programs require that each company constantly monitor trends in its own and competitive decision variables and resulting performance. The teams use the COMPETE Online Decision Entry System (CODES) (Palia & Mak, 2001; Palia et al., 2000) to enter their decisions, retrieve their results, and download and use a wide array of marketing dss packages. The comprehensive Online Cumulative Simulation Team Performance Package provides competing participant teams with feedback on their cumulative company profitability, market share by product, quality by product, cost of production by product, and efficiency with the simulation results for each decision period (Palia 2005). The Cost of Production Performance package extracts and identifies the antecedents of the cost of production for each product from the COMPETE simulation results for each decision period in order to help understand the underlying reasons for deviant performance.

In order to facilitate marketing control, the COMPETE simulation (Faria, 2006) is used together with web-based strategic market planning (Palia, 1991, 1995; Palia et al., 2002) and positioning (Palia et al., 2003, Palia & De Ryck, 2013) graphic packages, and a diverse array of Excel target profit pricing (Palia, 2008), competitor analysis (Palia & De Ryck, 2015), forecast error impact (Palia, 2011), marketing mix analysis, multiple regression analysis (Palia, 2004), ratios analysis, strategic business unit (SBU) analysis (Palia, 2009), portfolio normative consistency analysis (Palia, 2012), target portfolio analysis (Palia, 2017), cash flow analysis (Palia, 2010), profitability analysis (Palia & De Ryck, 2014), cumulative team performance (Palia, 2005), cost of production analysis (Palia & De Ryck, 2016), proforma analysis (Palia 2007), and marketing efficiency analysis (Palia, 2018) workbooks that auto-extract and present relevant data from the simulation results and facilitate subsequent analysis and decision-making. These marketing dss packages enable them to make better informed decisions such as target profit pricing, forecasting, market segmentation and positioning, market mix analysis, competitor analysis, forecast error impact analysis, ratios analysis, cash flow analysis, and strategic market planning, that are introduced to them progressively during the simulation competition. The comprehensive Online Cumulative Simulation Team Performance Package provides feedback on competing participant team rankings on their cumulative company profitability, market share by product, quality by product, cost of production by product, and efficiency based on simulation results for each decision period (Palia 2005). The End Game Performance package presents, in addition, graphic feedback on (a) cumulative profits, (b) profitability ratios (Earnings per Share, Return on Total Assets, Net Profit Margin, Sales-to-Asset Turnover, Return on Equity, Retained Income), (c) market share, (d) sales volume, (e) quality, (f) cost of production, (g) efficiency (Sales-to-Advertising, Sales-to-Salesforce expense, and Sales to Promotional Expense) ratios tied to the simulation results (Palia 2019).

PHASED DEBRIEFING PROCESS

Phased simulation debriefing based on insights derived from a review of the literature on experiential learning, business simulations and experiential exercises/games stimulates student engagement and enhances experiential learning (Palia 2019). The comprehensive phased debriefing approach relies on the usage of dss packages that are directly tied to the course mission, learning objectives and outcomes, and the computer simulation decisions and results. The semester is divided into 4 phases of differing length. The first 3-week long "Prepare to Compete" phase, is followed by a 7-week long "Compete" phase," a 5-week long "Report and Present" phase, and a "Wrap-Up" phase, which includes the final class session and the final exam date which is the deadline for the individual SMP Report.

During the first three weeks of the semester, the competing participant teams are prepared to compete. They are given a comprehensive in-class introduction to (a) decisions, markets and products in the COMPETE marketing simulation, (b) eighteen cumulative team performance criteria, (c) simulation financial statements (income statement, three regional income contribution statements, balance sheet, and underlying cash flow analysis), (d) other simulation reports including market research reports and trade association bulletin, (e) determinants of profitability, market share, quality, cost of production and efficiency, (f) the importance of accurate forecasting, (f) the elements and dimensions of strategy, and (g) alternative strategic thrusts, and the strategic analysis framework (Aaker, 2014; Aaker & Moorman, 2018).

The dss packages are progressively introduced based on the course schedule, topic coverage, and participant request throughout the semester. They are demonstrated in class with brief coverage of the purpose, significance, assumptions, usage and limitations. Based on participant suggestions, trimmed dss demo videos are subsequently uploaded to the course website for subsequent review by interested participants. The dss packages are used together with external research to segment, target, differentiate, position, forecast sales, budget, price, monitor performance, generate product positioning maps for each of the 9 SBUs, generate the BCG GSM and GGM grids based on performance data, as well as to analyze competitors, the normative position of brands and the target portfolio in strategic planning.

Scaffolding is implemented at participant-initiated individual or team meetings when needed. These scaffolding sessions are used to guide participants to better understand potential causes of sub-par team performance such as bankruptcy, poor profitability, weak market share, inferior quality, high cost of production, and/or poor efficiency ratios (sales-to-advertising expense, sales-to-salesforce expense, and sales-to-total promotional expense ratios). Independent participant-initiated scaffolding sessions are more effective and efficient in a remote learning environment. Participants set up individual or team Zoom sessions, share their computer screens, request help on specific problems faced, and seek clarification on specific issues.

The remainder of the paper summarizes (a) aggregate dss package usage metrics monitored on a daily basis throughout the Spring 2021 semester, and (b) individual responses to a dss package usage experience Qualtrics survey administered online at the end of the Spring 2021 semester. The dss package usage and dss-related article download metrics are analyzed both in-class and outside class by simulation phase.

DSS PACKAGE USAGE METRICS

Academic engagement, reflected by dss package usage, during the Spring 2021 semester was (a) monitored via the COMPETE Portal server log, and (c) tracked on the course website on a daily basis. Engagement metrics monitored on a daily basis include (a) team logins on the COMPETE Portal, (b) online product positioning map (PPM) graphics generated, and (c) online product portfolio analysis (PPA) graphics generated. In addition, engagement activity tracked daily on the course website include (a) page-views, (b) visitors, (c) sessions, (d) marketing dss package downloads, (e) downloads of dss package demo videos and dss package-related ABSEL articles. The in-class and outside-class engagement of 34 participants in two sections of the MKT 391 – Marketing Strategies course were monitored during the 'Prepare to Compete,' 'Compete,' 'Report and Present,' and 'Final Debriefing' phases of the course.

The COMPETE server log monitored the number of team logins on a daily basis. An online product positioning map (PPM) graphics package log monitored the number of PPMs generated, both inside and outside-class. Finally, an online product portfolio analysis (PPA) graphics package log monitored the number of BCG Growth Share and Growth Gain Matrices graphic displays generated both inside and outside-class. Statcounter was used to track the number of website visitors, sessions, page-views, marketing dss package downloads, trimmed marketing dss package demo video downloads, and ABSEL marketing dss article downloads, both inside and outside-class. Statcounter website tracking statistics covered the 'Prepare to Compete,' 'Compete,' 'Report & Present' and 'Final Debriefing' phases. The statistics, broken down by activity and period during each of the four phases, include in-class (based on date and time of website visit) and outside-class page-views, total page-views, number of sessions, number of visitors, and number of new visitors (see exhibit 1).

All 8 participant teams used the COMPETE Portal server throughout the Spring 2021 semester. Eighteen participants in 4 teams (C1, C2, C3 and C4) in industry C, and 16 participants in four teams (E1, E2, E3, and E4) in industry E registered 2915 team logins on the COMPETE Portal server for an average of 85.7 team logins by each of the 34 participants. The 34 participants in both industries C & E registered 826 (28.3%) team logins during the three-week 'Prepare to Compete' phase, 1007 (34.5%) team logins during the seven-week 'Compete' phase, 751 (25.8%) team logins during the five-week 'Report & Present' phase, and 331 (11.4%) team logins during the one-week 'Final Debriefing' phase (see exhibit 1).

EXHIBIT 1
Website Tracking (Individual User) and Portal Server Logins (by Team)

Statcounter Website Tracking (Individual User)							COMPETE Portal Server Logins (by Team)							
Phase	In Class	Outside	PageView	Sessions	Visitors	wVisit	C1 (5)	C2 (4)	C3 (5)	C4 (4)	E1 (4)	E2 (4)	E3 (4)	E4 (4)
Prepare to Compete	222	1357	1579	455	326	84	127	82	144	108	79	85	106	95
Compete	589	1839	2428	676	505	117	182	88	147	187	92	120	96	95
Report & Present	656	1797	2453	690	484	132	133	76	118	138	91	43	96	56
Final Debriefing	29	722	751	240	145	24	23	43	66	62	43	32	33	29
Grand Total	1496	6179	7675	2177	1549	413	465	289	475	495	305	280	331	275
Average ===>	44.00	181.7	225.7	64.03	Total ===>		1724				1191			
(n = 34)					Average ===>		95.78				74.44			
							Industry C (n=18)				Industry E (n=16)			
					Total ===>		2915							
					Average ===>		85.7							

Statcounter Website Tracking (Individual User)							COMPETE Portal Server Logins (by Team)									
Phase	In Class	Outside	PageView	Sessions	Visitors	wVisit	C1 (5)	C2 (4)	C3 (5)	C4 (4)	E1 (4)	E2 (4)	E3 (4)	E4 (4)		
Prepare to Compete	14.8%	22.0%	20.6%	20.9%	21%	20.3%	127	82	144	108	79	85	106	95	826	28.3%
Compete	39.4%	29.8%	31.6%	31.1%	33%	28.3%	182	88	147	187	92	120	96	95	1007	34.5%
Report & Present	43.9%	29.1%	32.0%	31.7%	31%	32.0%	133	76	118	138	91	43	96	56	751	25.8%
Final Debriefing	1.9%	11.7%	9.8%	11.0%	9.4%	5.8%	23	43	66	62	43	32	33	29	331	11.4%
Grand Total	1496	6179	7675	2177	1549	413	465	289	475	495	305	280	331	275	2915	100.0%
Average ===>	44.00	181.0	225.7	64.03	Total ===>		1724				1191					
(n = 34)					Average ===>		95.78				74.44					
							Industry C (n=18)				Industry E (n=16)					
					Total ===>		2915									
					Average ===>		85.74									

During Spring 2021, a total of 34 participants in eight teams (C1, C2, C3, C4, E1, E2, E3, and E4) in two industries (C and E) registered 2,915 server logins (see exhibit 1), and generated a total of 2,644 PPM and PPA graphics based on the COMPETE portal server log (see exhibit 2). These 2,644 graphics included 1,507 PPM graphs used together with sample VALS2 psycho-geo-demo-graphic segmentation data in product positioning analysis, and 1,137 PPA graphs used in strategic market planning. Both online PPM and PPA graphics based on simulation results are generated by participants to (a) monitor performance relative to competitors, (b) submit weekly writing assignments on product positioning and specific steps in strategic market planning, (c) prepare sections on positioning and strategic market planning in the team presentation, and (d) prepare the individual SMP report.

A total of 1,549 visitors registered 7,675 page-views in 2,177 sessions. These 7,675 page-views included 1,496 (19.5%) in-class page-views and 6,179 (80.5%) outside-class page-views (see exhibit 1). In addition, the 34 participants downloaded 18 marketing dss packages a total of 1050 times (402 in-class, and 648 outside-class). Further they downloaded 16 articles on marketing concepts (see exhibit 2), and dss packages a total of 146 times (19 in-class, and 127 outside-class).

DSS PACKAGE DOWNLOADS BY SIMULATION PHASE

Participants in both industries C and E generated online product positioning map (PPM) and product portfolio analysis (PPA) graphics, based on the simulation results, in order to assess their positioning strategy, strategic business unit (SBU) portfolio and to formulate a strategic market plan for their company. They generated (a) 163 PPM graphics (all 163 outside-class) during the 'Prepare to Compete' phase, (b) 555 PPM graphics (13 in-class and 542 outside-class) during the 'Compete' phase, (c) 504 PPM graphics (15 in-class and 489 outside-class) during the 'Report & Present' phase, and (d) 285 PPM graphics (all 285 outside-class) during the 'Final Debriefing' phase (see exhibit 2). The relatively heavy usage of the PPM graphics package throughout the semester, reflects (a) monitoring the position of each of the 9 SBUs relative to competitors, and preparation of the (b) weekly writing assignment on 'positioning analysis,' (c) the section on 'positioning' in the team presentation, and (d) the individual SMP report.

In addition, participants generated (a) 15 online PPA graphics (13 in-class and 2 outside-class) during the 'Prepare to Compete' phase, (b) 177 PPA graphics (7 in-class and 170 outside-class) during the 'Compete' phase, (c) 670 PPA graphics (94 in-class and 576 outside-class) during the 'Report & Present' phase, and (d) 275 PPA graphics (all 275 outside-class) during the 'Final Debriefing' phase (see exhibit 2). The relatively low usage (16.9%) of the online PPA graphics during the first two phases is because the first online PPA graphic is generated after decision period 8, after the industry growth rates of each of the nine SBUs from year 1 -2 are computed. The relatively heavy usage (83.1%) of the online PPA graphics during the 'Compete' 'Report & Present' and 'Final Debriefing' phases reflects the use of the PPA graphics in the weekly writing assignments, as well as preparation of the team presentation and the individual Strategic Market Plan (SMP) Report.

Further, participants downloaded 18 marketing dss packages, that enable them to make better informed decisions, a total of 1050 times during the simulation competition (see exhibit 3). These 18 marketing dss packages were downloaded (a) 337 (32.1%) times during the 'Compete' phase, (b) 626 (59.6%) times during the 'Report & Present' phase, and (c) 87 (8.3%) times during the

'Final Debriefing' phase. The downloads of each dss package by simulation phase are presented in descending order of download frequency.

EXHIBIT 2
Online Graphics Package and Marketing DSS Package Downloads

		n=34	n=34	n=34	n=34	n=34									
		Online Graphics Package Downloads				Marketing DSS Package Downloads									
		Inside Class		Outside Class		Inside Class					Outside Class				
Phase	Start Date	PPM (C+E)	PPA	PPM (C+E)	PPA	Analysis	Perf.	CAP	Forms	Articles	Analysis	Perf.	CAP	Forms	Articles
Prepare to Compete	1/12/2021	0	13	163	2	0	0	0	7	1	0	0	0	24	3
Compete	2/2/2021	13	7	542	170	70	7	15	3	12	57	6	15	8	20
Report & Present	3/24/2021	15	94	489	576	102	25	0	5	5	136	75	1	2	78
Final Debriefing	5/6/2021	0	0	285	275	0	0	0	0	0	38	8	1	2	28
Grand Total		**28**	**114**	**1479**	**1023**	**172**	**32**	**15**	**15**	**18**	**231**	**89**	**17**	**37**	**129**
		PPM (C+E)	PPA	PPM (C+E)	PPA	Analysis	Perf.	CAP	Forms	Articles	Analysis	Perf.	CAP	Forms	Articles
		Inside Class		Outside Class		Inside Class					Outside Class				
		Online Graphics Package Downloads				Marketing DSS Package Downloads									
		n=34	n=34	n=34	n=34	n = 34									

	Total	Avg.	n
Online PPMC	1046	58.1	18
Online PPME	461	28.8	16
Online PPA	1137	33.4	34
Online Graphics	2644	77.8	34
Online PPM	1507	44.3	34

	Total	Avg.	n
Analysis	403	11.9	34
Performance	121	3.6	34
CAP	32	0.9	34
Forms	52	1.5	34
Articles	147	4.3	34
DSS Packages	755	22.2	34

First, the Normative Position of Brands (NPB) Analysis package was downloaded 549 times - 170 (31%) times during the 'Compete' phase to assess portfolio performance, 332 (60.5%) times during the 'Report & Present' phase to prepare both the team presentation and individual SMP report, and 47 (8.5%) times during the 'Final Debriefing' phase to finalize the individual SMP Report (see exhibit 3). The NPB Analysis package is used together with the PPA graphics package to (a) check the internal balance of the SBU portfolio, (b) assess the positive and negative trends in SBU trajectories, and (c) evaluate competitor SBU portfolios during and after the simulation competition.

Second, the Multiple Regression Data Matrices package was downloaded 88 times - 55 (62.5%) times during the 'Compete' phase to forecast sales and decide on shipments during the final decision period, and 33 (37.5%) times during the 'Report & Present' phase to prepare the team presentation (see exhibit 3). This package is used to extract and prepare 9 data matrices (one for each of the 9 SBUs) on potential sales and its determinants (price, advertising, salesforce, quality, average competitor price, average competitor advertising, average competitor sales force, average competitor quality, and seasonal variation). The multiple regression model and the accuracy of the resulting forecast are reported on during the team presentation at the end of the semester.

Third, the Competitor Analysis package was downloaded a total of 61 times – 20 (32.8%) times during the 'Compete' phase, 35 (57.4%) times during the 'Report & Present' phase to prepare the team presentation, and 6 (9.8%) times during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). This package is used to (a) assess competitors during the simulation competition (b) implement SWOT analysis, and (c) develop a target SBU portfolio in strategic market planning.

Fourth, the Efficiency Analysis package was downloaded a total of 45 times - 40 (88.9%) times during the 'Report & Present' phase to prepare the team presentation, and 5 (11.1%) times during the 'Final Debriefing' phase) to prepare the individual SMP report (see exhibit 3). The Efficiency Analysis package is used to (a) extract relevant data from the simulation results workbook, and (b) present 'sales-to-advertising ratio,' 'sales-to-salesforce expense ratio,' and 'sales-to-promotional expense ratio trends relative to competitors, and (c) analyze and present the underlying reasons for weak marketing efficiency during a specific period. Other marketing efficiency-related data extracted include (a) industry effort indices, and (b) advertising awareness indices.

Fifth, the Profit Analysis package was downloaded a total of 43 times - 13 (30.2%) times during the 'Compete' phase to assess current profitability, 29 (67.4%) times during the 'Report & Present' phase to prepare the team presentation, and once (2.3%) during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). The Profit Analysis package is used to (a) extract profit (earnings per share) data from the simulation results workbook, (b) identify periods of poor profitability relative to goals/competitors/time period, and (c) analyze and present the underlying reasons for poor profitability during a specific period.

Sixth, the Proforma Analysis package was downloaded a total of 43 times - 5 (11.6%) times during the 'Compete' phase for use in budgeting, 36 (83.7%) times during the 'Report & Present' phase to prepare the team presentation, and twice (4.7%) during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). The Proforma Analysis is used to prepare proforma cost of goods sold, income statement, cash flow statement and balance sheet for use in budgeting, marketing control and strategic market planning. The relatively low usage during the earlier phases reflects delayed introduction of the package to the participants.

Seventh, the Forecast Error Impact package was downloaded a total of 28 times - 11 (39.3%) times during the 'Compete' phase for use in tracking forecast error, 16 (57.1%) times during the 'Report & Present' phase to prepare the team presentation, and once (3.6%) during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). Participants use the Forecast Error Impact Analysis package to monitor, track and analyze the impact of stockouts, overtime, ending inventory, and lost sales by SBU by period on company profit.

Eighth, the Cash Flow Analysis package was downloaded a total of 28 times - twice (7.1%) during the 'Compete' phase, 18 (64.3%) times during the 'Report & Present' phase, and 8 (28.6%) times during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). The Cash Flow Analysis package is used to (a) extract relevant data on the sources and uses of funds by period (b) better understand the reasons for cash deficits and bankruptcy, and (c) to check the financial balance of the proposed strategic market plan.

Ninth, the Market Share Analysis package was downloaded a total of 25 times - once (4%) during the 'Compete' phase, 20 (80%) times during the 'Report & Present' phase to prepare the team presentation, and 4 (16%) times during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). The Market Share Analysis package is used to extract market share data from the simulation results workbook, (b) present market share trends relative to competitors, and (c) analyze and present the reasons for weak market share during a specific period.

Tenth, the Manufacturing/Shipping Analysis package was downloaded a total of 25 times (all 25 times during the 'Compete' phase). Participants use this dss package to decide on shipments taking into account ending inventory in the prior period, demand estimates, and safety stock. The systematic yet simple process tends to reduce ending inventory, storage charges, stockouts, overtime production, and lost sales.

Eleventh, the Target Portfolio Analysis package was downloaded a total of 21 times - once (4.8%) during the 'Compete' phase, 17 (80.9%) times during the 'Report & Present' phase, and thrice (14.3%) during the 'Final Debriefing' phase (see exhibit 3). Participants use the Target Portfolio Analysis package to develop a target portfolio of SBUs, the penultimate step in preparing a strategic market plan for both the team presentation and the individual final report.

Twelfth, the Marketing Mix Analysis package was downloaded a total of 20 times - thrice (15%) during the 'Compete' phase, 10 (50%) times during the 'Report & Present' phase to prepare the team presentation, and 7 (35%) times during the 'Final Debriefing' phase to prepare the individual SMP report (see exhibit 3). The Marketing Mix Analysis package extracts and presents the marketing mix of all competing firms for a specific period. The multiple bar graphs based on simulation results are presented both by SBU and by decision for each team.

Thirteenth, the Cost (of Production) Analysis package was downloaded a total of 20 times - 4 times (20%) during the 'Compete' phase, 15 (75%) times during the 'Report & Present' phase, and once (5%) during the 'Final Debriefing' phase (see exhibit 3). The Cost (of Production) Analysis package is used to (a) extract unit cost of production data from the simulation results workbook, (b) present cost of production trends for each product relative to the industry average as competitor cost of production is confidential and cannot be accessed from the company results workbook, and (c) analyze the reasons for high cost of production.

Fourteenth, the Strategic Business Unit (SBU) Analysis package was downloaded a total of 17 times - 14 (82.4%) times during the 'Compete' phase, and 3 (17.6%) times during the 'Report & Present' phase (see exhibit 3). Participants use the Strategic Business Unit (SBU) Analysis package to analyze the contribution of each of the nine SBUs to the profit or loss of the company.

Fifteenth, the Quality Analysis package was downloaded a total of 15 times - 14 (93.3%) times during the 'Report & Present' phase, and once (6.7%) during the 'Final Debriefing' phase (see exhibit 3). The Quality Analysis package is used to (a) extract quality data from the simulation results workbook, (b) present quality trends relative to competitors, and (c) analyze the reasons for inferior quality.

Sixteenth, the Target Profit Pricing package was downloaded a total of 11 times - 10 (90.9%) times during the 'Compete' phase, and once (9.1%) during the 'Report & Present' phase (see exhibit 3). Participants use the Target Profit Pricing package as an input in setting price for a specific SBU based on the desired profit and price margin, as well as fixed and variable costs extracted from the simulation results workbook.

Seventeenth, the Profit Forecasting Analysis package was downloaded a total of 7 times - 3 (42.9%) times during the 'Compete' phase, 3 (42.9%) times during the 'Report & Present' phase, and once (14.3%) during the 'Final Debriefing' phase (see exhibit 3). The Profit Forecasting Analysis package is used to determine the potential profitability of alternative marketing strategies based on user assumptions on price, unit sales, fixed costs, and variable costs for each alternative strategy considered.

Finally, the Ratios Analysis package was downloaded 4 times - all 4 times during the 'Report & Present' phase (see exhibit 3). This dss package (a) extracts data on profit (eps) and total sales revenue by period for all competitors. from the simulation results workbook, and (b) calculates and presents the approximate Return on Total Assets (ROTA), exact Net Profit Margin (NPM), and approximate Sales-to-Asset Turnover (SATO) for each competitor by period.

The 1050 dss package downloads consist of 402 (38%) in-class downloads and the remaining 648 (62%) outside class downloads (see exhibit 4). The download frequency ranking of each of the 18 dss packages as well as the total number of downloads,

EXHIBIT 3
Marketing DSS Package Downloads by Simulation Phase

		Simulation Phase			
Marketing DSS Package Downloads	Total	Prepare	Compete	Report	Final
Normative Position of Brands	549	0	170	332	47
Multiple Regression Data Matrices	88	0	55	33	0
Competitor Analysis	61	0	20	35	6
Efficiency Analysis (AAI + IEI)	45	0	0	40	5
Profit Analysis	43	0	13	29	1
Proforma Analysis	43	0	5	36	2
Forecast Error Impact Analysis	28	0	11	16	1
Cash Flow Analysis	28	0	2	18	8
Market Share Analysis	25	0	1	20	4
Manufacturing/Shipping Analysis	25	0	25	0	0
Target Portfolio Analysis	21	0	1	17	3
Marketing Mix Analysis	20	0	3	10	7
Cost Analysis	20	0	4	15	1
Strategic Business Unit (SBU) Analysis	17	0	14	3	0
Quality Analysis	15	0	0	14	1
Target Profit Pricing	11	0	10	1	0
Profit Forecasting Analysis	7	0	3	3	1
Ratios Analysis	4	0	0	4	0
Debriefing Phase Total ==>	1050	0	337	626	87

in-class downloads, and out-of-class downloads by debriefing phase clearly indicate that dss package downloads peak during the 'Compete' and 'Report & Present' phases of the simulation competition (see exhibit 4).

In order to promote dss package usage during the simulation competition, the dss package introduction and demos via Zoom screen share were recorded, trimmed, and uploaded to the university Google drive for 24/7 participant access and review as and when needed. Links to the uploaded dss package demo videos were posted on the course website in order to enable tracking of dss package downloads by participants.

DSS PACKAGE DEMO VIDEO DOWNLOADS

In response to participant suggestions, the dss package demos via Zoom were progressively recorded, trimmed, and uploaded to the university Google drive with restricted access. Links to the trimmed dss videos on the course website enabled tracking of the dss analysis package demo video downloads. As the dss package demos were implemented progressively, dss package demo video downloads include set-up downloads. Participants downloaded 17 marketing dss package demo videos a total of 313 times during the simulation competition (see exhibit 5).

The top dss package video downloads are the Regression Data Matrices and Excel Add-Ins demo videos used in sales forecasting. The Regression Data Matrices demo video and the Excel Add-Ins demo video were downloaded a total of 60 times - 7 (11.7%) times during the 'Prepare to Compete' phase, 35 (58.3%) times during the 'Compete' phase, and 18 (30%) times during the 'Report & Present' phase (see exhibit 5). The Regression Data Matrices demo video is used to review the procedure to extract relevant data from the team simulation results workbook, and create 9 SBU data matrices for subsequent sales forecast model building. The Excel Add-Ins demo video reviews the procedure to set up Statpak and VBA Statpak in Excel for statistical analysis of the simulation results. The peak 35 downloads during the 'Compete' phase reflects coverage of sales forecasting towards the end of competition in order to maximize degrees of freedom.

Second, the Target Profit Pricing demo video, used in pricing, was downloaded 41 times – 18 (43.9%) times during the 'Prepare to Compete' phase, and 23 (56.1%) times during the 'Compete' phase. This video was frequently downloaded at the start of competition in order to set price for each SBU, while simultaneously taking into consideration target profit and desired margin on the demand side, and fixed and variable costs on the supply side (see exhibit 5).

EXHIBIT 4
Marketing DSS Package Downloads (In- and Out-of-Class)

MKT 391 Spring 2021 Marketing Decision Support Package Downloads

Download Frequency Ranking ==>	7	9	16	5	9	15	12	4	3	5	7	2	17	14	18	11	12	1	
Marketing DSS Package Download ==>	Forecast Error Impact Analysis	Manufacturing /Shipping Analysis	Target Profit Pricing	Profit Analysis	Market Share Analysis	Quality Analysis	Cost Analysis	Efficiency Analysis	Competitor Analysis	Proforma Analysis	Cash Flow Analysis	Multiple Regression Matrix	Profit Forecasting Analysis	Strategic Business Unit Analysis	Ratios Analysis	Target Portfolio Analysis	Marketing Mix Analysis	Normative Position of Brands Analysis	Marketing DSS Packages Total
Simulation Debriefing Phase -- Start Date																			
Total # of Downloads ==>	28	25	11	43	25	15	20	45	61	43	28	88	7	17	4	21	20	549	1050
Startup -- 1/12/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Debriefing -- 1/19/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intermediate Debriefing -- 2/2/2021	11	25	10	13	1	0	4	0	20	5	2	55	3	14	0	1	3	170	337
Report & Present Phase -- 3/24/2021	16	0	1	29	20	14	15	40	35	36	18	33	3	3	4	17	10	332	626
Final Debriefing -- 5/4/2021	1	0	0	1	4	1	1	5	6	2	8	0	1	0	0	3	7	47	87
																			38%
In-Class Downloads ==>	7	11	6	13	4	3	2	9	20	40	4	36	4	13	3	8	2	217	402
Startup -- 1/12/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Initial Debriefing -- 1/19/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intermediate Debriefing -- 2/2/2021	5	11	6	7	0	0	0	0	12	5	0	26	3	13	0	1	1	91	181
Report & Present Phase -- 3/24/2021	2	0	0	6	4	3	2	9	8	35	4	10	1	0	3	7	1	126	221
Final Debriefing -- 5/4/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
																			62%
Out-of-Class Downloads ==>	21	14	5	30	21	12	18	36	41	3	24	52	3	4	1	13	18	332	648
Startup -- 1/12/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Debriefing -- 1/19/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intermediate Debriefing -- 2/2/2021	6	14	4	6	1	0	4	0	8	0	2	29	0	1	0	0	2	79	156
Report & Present Phase -- 3/24/2021	14	0	1	23	16	11	13	31	27	1	14	23	2	3	1	10	9	206	405
Final Debriefing -- 5/4/2021	1	0	0	1	4	1	1	5	6	2	8	0	1	0	0	3	7	47	87
	Forecast Error Analysis	Manufacturing /Shipping Analysis	Target Profit Pricing	Profit Analysis	Market Share Analysis	Quality Analysis	Cost Analysis	Efficiency Analysis	Competitor Analysis	Proforma Analysis	Cash Flow Analysis	Multiple Regression Matrix	Profit Forecasting Analysis	Strategic Business Unit Analysis	Ratios Analysis	Target Portfolio Analysis	Marketing Mix Analysis	Normative Position of Brands Analysis	Marketing DSS Packages Total

MKT 391 Spring 2021 Marketing Decision Support Package Downloads

Third, the Competitor Analysis demo video was downloaded 34 times – 9 (26.5%) times during the 'Prepare to Compete' phase, 13 (38.2%) times during the 'Compete' phase, and 12 (35.3%) times during the 'Report & Present' phase. This video reviews the procedure to (a) monitor and assess competitors during the simulation competition, and (b) prepare both the 'Strategic Analysis' and 'Product Portfolio Analysis' sections of the team presentation and the individual SMP Report (see exhibit 5).

EXHIBIT 5
Marketing DSS Video Downloads by Simulation Phase

		Simulation Debriefing Phase			
Marketing DSS Video Downloads	Total	Prepare	Compete	Report	Final
Regression Data Matrices + Excel Add-Ins	60	7	35	18	0
Target Profit Pricing	41	18	23	0	0
Competitor Analysis	34	9	13	12	0
Forecast Error Impact	24	0	20	4	0
Target Portfolio Analysis	24	6	6	12	0
SBU Analysis	20	7	12	1	0
DSS Package Usage	19	0	19	0	0
Normative Position of Brands	16	4	5	7	0
Manufacturing/Shippin Analysis	16	5	10	1	0
Cash Flow Analysis	14	6	8	0	0
Profit Analysis	12	7	2	3	0
Profit Forecasting Analysis	10	4	6	0	0
Multiple Regression Analysis	6	2	1	3	0
Product Positioning Map	6	0	6	0	0
Proforma Analysis	6	2	4	0	0
Product Portfolio Analysis	3	0	3	0	0
DSS Package Location	2	0	2	0	0
Debriefing Phase Total ==>	313	77	175	61	0

Fourth, the Forecast Error Impact demo video was downloaded 24 times - 20 (83.3%) times during the 'Compete' phase and 4 (16.7%) times during the 'Report & Present' phase. This dss package and video were introduced after the first year of competition. It reveals the dollar impact of stockouts, lost sales, overtime production, and excess inventory on company profit by decision period (see exhibit 5).

Fifth, the Target Portfolio Analysis demo video was downloaded 24 times - 6 (25%) times during the 'Prepare to Compete' phase, 6 (25%) times during the 'Compete' phase, and 12 (50%) times during the 'Report & Present' phase). The relatively heavy usage during the 'Report & Present' phase reflects the need to implement the penultimate step in strategic market planning at the end of the simulation competition (see exhibit 5).

Sixth, the SBU Analysis demo video was downloaded 20 times - 7 (35%) times during the 'Prepare to Compete' phase, 12 (60%) times during the 'Compete' phase, and once (5%) during the 'Report & Present' phase. The relatively heavy usage during the 'Compete' phase reflects the early introduction of this dss package to operationalize the 'Iceberg Principle' in determining the contribution to company profit or loss of each of the 9 SBUs (see exhibit 5).

Seventh, the DSS Package Usage demo video was downloaded 19 times - all 19 times during the 'Compete' phase. This demo video introduces participants to the sequential usage procedure (download, extract, transfer, and launch) with all dss packages. First download the zipped package, next extract the zipped folder, then transfer the company results data file/s, and finally launch the dss package program file to reveal company data in a format that facilitates understanding and informed decision-making (see exhibit 5).

Eighth, the Normative Position of Brands demo video was downloaded 16 times - 4 (25%) times during the 'Prepare to Compete' phase, 5 (31.3%) times during the 'Compete' phase, and 7 (43.7%) times during the 'Report & Present' phase. This demo video reviews the procedure to be used during the first three steps (check internal balance, look for trends, and evaluate competitors) in strategic market planning (see exhibit 5).

Ninth, the Manufacturing/Shipping Analysis demo video was downloaded 16 times – 5 (31.2%) times during the 'Prepare to Compete' phase, 10 (62.6%) times during the 'Compete' phase, and once (6.2%) during the 'Report & Present' phase. This demo video reviews the procedure to decide on shipments for each of the 9 SBUs based on ending inventory of the prior period, the sales forecast, and the safety stock in order to avoid stockouts, lost sales and lost customers (see exhibit 5).

Tenth, the Cash Flow Analysis demo video was downloaded 14 times – 6 (42.9%) times during the 'Prepare to Compete' phase, and 8 (57.1%) times during the 'Compete' phase. This video reviews the usage of the cash flow analysis package to (a) determine the reasons for cash surplus, deficiency and/or bankruptcy during each decision period, and (b) check the financial balance of the strategic market plan (see exhibit 5).

Eleventh, the Profit Analysis demo video was downloaded 12 times - 7 (58.3%) times during the 'Prepare to Compete' phase, 2 (16.7%) times during the 'Compete' phase, and 3 (25%) times during the 'Report & Present' phase. This demo video reviews the procedure to uncover potential reasons for poor profitability during a specific decision period (see exhibit 5).

Twelfth, the Multiple Regression Analysis video was downloaded 6 times - 2 (33.3%) times during the 'Prepare to Compete' phase, once (16.7%) during the 'Compete' phase, and 3 (50%) times during the 'Report & Present' phase. This demo video reviews the sales forecast model building procedure towards the end of the simulation (see exhibit 5).

Thirteenth, the Product Positioning Map (PPM) demo video was downloaded 6 times (all 6 times during the 'Compete' phase. This demo video reviews use of the interactive online PPM graphics package to generate PPMs for each of the 9 SBUs used in positioning analysis (see exhibit 5).

Fourteenth, the Proforma Analysis demo video was downloaded 6 times - 2 (33.3%) times during the 'Prepare to Compete' phase, and 4 (66.7%) times during the 'Compete' phase. This demo video reviews the usage of the Proforma Analysis package used in budgeting. The Proforma Analysis package was introduced towards the end of competition (see exhibit 5).

Fifteenth, the Product Portfolio Analysis (PPA) demo video was downloaded 3 times (all 3 times during the 'Compete' phase). This demo video reviews use of the interactive online PPA graphics package to generate the BCG GSM and GGM strategic grids. The online PPA graphics package is used after 2 years of competition (see exhibit 5).

Finally, the DSS Package Location demo video was downloaded twice during the 'Compete' phase. This demo video reviews location of the dss analysis and performance packages, and navigation of the course website and COMPETE Portal to access the dss packages (see exhibit 5).

The 313 dss package demo video downloads consist of 16 (5.26%) in-class downloads and the remaining 288 (94.74%) outside class downloads (see exhibit 6). The download frequency ranking of each of the 20 dss package demo videos as well as the total number of downloads, in-class downloads, and out-of-class downloads by debriefing phase clearly indicate that dss package video downloads peak during the 'Compete' and 'Report & Present' phases of the simulation competition (see exhibit 6).

Tracking downloads of both the dss packages and dss demo videos by simulation debriefing phase, by critical course events

such as decision, report and presentation deadlines, enables the instructor to sequence the introduction, demonstration, and use of dss packages in order to facilitate informed decision making and enhance experiential learning.

In order to facilitate appropriate dss package usage during the simulation competition, copies of ABSEL articles that focus on the marketing dss packages and cover relevant marketing concepts were uploaded to the COMPETE Portal. Links to the uploaded dss package-related ABSEL articles were posted on the course website in order to enable tracking of ABSEL article downloads by participants.

DSS-RELATED ARTICLE DOWNLOADS

During the Spring 2021 semester, participants downloaded ABSEL papers that focus on the marketing dss packages and cover relevant marketing concepts a total of 146 times. The 146 dss package article downloads consist of 4 (2.7%) downloads during the 'Prepare to Compete' phase, 32 (21.9%) downloads during the 'Compete' phase, 82 (56.2%) downloads during the 'Report & Present' phase, and 28 (19.2%) downloads during the 'Final Debriefing' phase (see exhibit 7).

The 'Multiple Regression Data Matrices' article topped the download list with 18 downloads, followed by 'SMP Cash Flow Analysis' (16 downloads), 'NPB & Trends Analysis' (14 downloads), 'Positioning Analysis' (12 downloads), 'Profitability Analysis' (11 downloads), 'SBU Analysis' (9 downloads), 'Target Portfolio Analysis' (9 downloads), 'Efficiency Analysis' (9 downloads), 'Enhancing Experiential Learning via Phased Simulation Debriefing' (8 downloads), 'Competitor Analysis' (8 downloads), 'Target Profit Pricing' (8 downloads), 'Enhancing Engagement & Learning via Sustained Student Engagement' (6 downloads), 'Forecast Error Impact Analysis' (5 downloads), 'Proforma Analysis' (5 downloads), 'Cost of Production Analysis' (5 downloads), and 'Sustaining Engagement & Learning in a Pandemic' (3 downloads).

EXHIBIT 6
Marketing DSS Video Downloads (In- and Out-of-Class) Download

MKT 391 Spring 2021 Marketing DSS Video Downloads

Download Frequency Ranking ==>	10	3	7	17	4	8	13	16	11	12	1	13	8	13	6	4	2	0	0	0	0
Marketing DSS Video Download ==>	Cash Flow Analysis vcf	Competitor Analysis vca	DSS Package Usage vdss	DSS Package Location vdsl	Forecast Error Impact vfei	Mfg Shipping Analysis vms	Product Positioning Map vppm	Product Portfolio Analysis vppa	Profit Analysis vpa	Profit Forecasting Analysis vpf	Regression Data Matrices vdm	Multiple Regression Analysis vsf	Normative Position of Brands vnpb	Proforma Analysis vbu	SBU Analysis vsbu	Target Portfolio Analysis vtp	Target Profit Pricing vbe	SMP Report Video	SMP Report Video	SMP Report Video	Marketing DSS Videos
Simulation Debriefing Phase -- Start Date																					
Total # of Downloads ==>	14	34	19	2	24	16	6	3	12	10	60	6	16	6	20	24	41	0	0	0	304
Startup -- 1/12/2021	2	3	0	0	0	4	0	0	3	2	2	2	0	0	2	4	15	0	0	0	39
Initial Debriefing -- 1/19/2021	4	6	0	0	0	1	0	0	4	2	5	0	4	2	5	2	3	0	0	0	38
Intermediate Debriefing -- 2/2/2021	8	13	19	2	20	10	6	3	2	6	35	1	5	4	12	6	23	0	0	0	167
Report & Present Phase -- 3/24/2021	0	12	0	0	4	1	0	0	3	0	18	3	7	0	1	12	0	0	0	0	60
Final Debriefing -- 5/4/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
																					5.26%
In-Class Downloads ==>	1	1	1	0	1	0	0	0	0	0	6	0	1	0	1	1	2	0	0	0	16
Startup -- 1/12/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Debriefing -- 1/19/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intermediate Debriefing -- 2/2/2021	1	1	1	0	1	0	0	0	0	0	4	0	0	0	1	1	2	0	0	0	13
Report & Present Phase -- 3/24/2021	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	3
Final Debriefing -- 5/4/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
																					94.74%
Out-of-Class Downloads ==>	13	33	18	2	23	16	6	3	12	10	54	6	15	6	19	23	39	0	0	0	288
Startup -- 1/12/2021	2	3	0	0	0	4	0	0	3	2	2	2	0	0	2	4	15	0	0	0	39
Initial Debriefing -- 1/19/2021	4	6	0	0	0	1	0	0	4	2	5	0	4	2	5	2	3	0	0	0	38
Intermediate Debriefing -- 2/2/2021	7	12	18	2	19	10	6	3	2	6	31	1	5	4	11	5	21	0	0	0	154
Report & Present Phase -- 3/24/2021	0	12	0	0	4	1	0	0	3	0	16	3	6	0	1	12	0	0	0	0	57
Final Debriefing -- 5/4/2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cash Flow Analysis vcf	Competitor Analysis vca	DSS Package Usage vdss	DSS Package Location vdsl	Forecast Error Impact vfei	Mfg Shipping Analysis vms	Product Positioning Map vppm	Product Portfolio Analysis vppa	Profit Analysis vpa	Profit Forecasting Analysis vpf	Regression Data Matrices vdm	Multiple Regression Analysis vsf	Normative Position of Brands vnpb	Proforma Analysis vbu	SBU Analysis vsbu	Target Portfolio Analysis vtp	Target Profit Pricing vbe	SMP Report Video	SMP Report Video	SMP Report Video	Marketing DSS Videos

MKT 391 Spring 2021 Marketing DSS Video Downloads

The 146 dss package article downloads consist of 19 (13%) in-class downloads and the remaining 127 (87%) outside class downloads (see exhibit 8). The download frequency ranking of each of the 16 dss package article as well as the total number of downloads, in-class downloads, and outside class downloads by debriefing phase clearly indicate that dss package article downloads also peaked during the 'Compete' and 'Report & Present' phases of the simulation competition (see exhibit 8).

Download tracking of the dss packages, trimmed dss videos, and dss-related articles reveal that engagement and learning can be augmented via dss package usage. Participants request that dss packages be introduced, demonstrated, and applied early in the semester. In addition, participants request that dss package demos be recorded, trimmed and uploaded to the University Google drive for subsequent 24/7 access and review as needed. Further, participants/teams initiate Zoom sessions to address their needs as they strive to improve team performance.

The above behavioral engagement metrics on aggregate dss package, demo video, and article downloads are supplemented with affective (attitudinal) disaggregated engagement responses by individual participants to an online Qualtrics survey implemented at the end of the semester. Both the aggregate behavioral engagement metrics tracked and disaggregated survey responses by individual simulation participants address a recurring concern about individual dss package usage expressed by session participants at past ABSEL conferences.

EXHIBIT 7
Marketing DSS Video Downloads by Simulation Phase

Simulation Debriefing Phase					
Prepare	Compete	Report	Final	Total	Marketing DSS Article Downloads
0	4	14	0	18	2004 Multiple Regression
0	2	2	12	16	2010 SMP Cash Flow Analysis
0	0	9	5	14	2012 NPB & Trends Analysis
0	3	7	2	12	2013 Positioning Analysis
0	0	11	0	11	2014 Profitability Analysis
0	3	6	0	9	2009 SBU Analysis
0	1	5	3	9	2017 Target Portfolio Analysis
0	2	6	1	9	2018 Efficiency Analysis
3	2	3	0	8	2019 Enhancing Experiential Learning
0	0	6	2	8	2015 Competitor Analysis
0	8	0	0	8	2008 Target Profit Pricing
1	4	1	0	6	2020 Sustained Student Engagement
0	0	5	0	5	2011 Forecast Error Impact Anakysis
0	0	2	3	5	2007 Proforma Analysis
0	1	4	0	5	2016 Cost of Production Analysis
0	2	1	0	3	2021 Sustaining Engagement in Pandemic
4	32	82	28	146	<== Debriefing Phase Total

EXHIBIT 8
Marketing DSS Article Downloads by Simulation Phase (In- and Out-of-Class)

MKT 391 Spring 2021 Marketing DSS Article Downloads																	
	9	2	13	9	4	1	5	3	6	13	9	6	13	6	12	16	<== Download Frequency Ranking
ABSEL	2019	2010	2011					2012			2008	2017	2016		2020	2021	<== Marketing DSS Article Download
Articles	Enhancing	SMP	Forecast	2015	2013	2004	2014	NPB &	2009	2007	Target	Target	Cost of	2018	Sustained	Sustaining	
Total	Experiential	Cash Flow	Error	Competitor	Positioning	Multiple	Profitability	Trends	SBU	Proforma	Profit	Portfolio	Production	Efficiency	Student	Engagement	Simulation Debriefing Phase -- Start Date
	Learning	Analysis	Impact	Analysis	Analysis	Regression	Analysis	Analysis	Analysis	Analysis	Pricing	Analysis	Analysis	Analysis	Engagement	Pandemic	
146	8	16	5	8	12	18	11	14	9	5	8	9	5	9	6	3	<== Total # of Downloads
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	Startup -- 1/12/2021
3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Initial Debriefing -- 1/19/2021
32	2	2	0	0	3	4	0	0	3	0	8	1	1	2	4	2	Intermediate Debriefing -- 2/2/2021
82	3	2	5	6	7	14	11	9	6	2	0	5	4	6	1	1	Report & Present Phase -- 3/24/2021
28	0	12	0	2	2	0	0	5	0	3	0	3	0	1	0	0	Final Debriefing -- 5/4/2021
13%																	
19	1	1	0	0	0	2	0	3	1	2	6	1	0	2	0	0	<== In-Class Downloads
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Startup -- 1/12/2021
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Initial Debriefing -- 1/19/2021
13	0	1	0	0	0	2	0	0	1	0	6	1	0	2	0	0	Intermediate Debriefing -- 2/2/2021
5	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	Report & Present Phase -- 3/24/2021
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Final Debriefing -- 5/4/2021
87%																	
127	7	15	5	8	12	16	11	11	8	3	2	8	5	7	6	3	<== Out-of-Class Downloads
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	Startup -- 1/12/2021
2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Initial Debriefing -- 1/19/2021
19	2	1	0	0	3	2	0	0	2	0	2	0	1	0	4	2	Intermediate Debriefing -- 2/2/2021
77	3	2	5	6	7	14	11	6	6	0	0	5	4	6	1	1	Report & Present Phase -- 3/24/2021
28	0	12	0	2	2	0	0	5	0	3	0	3	0	1	0	0	Final Debriefing -- 5/4/2021
ABSEL	2019	2010	2011	2015	2013	2004	2014	2012	2009	2007	2008	2017	2016	2018	2020	2021	
Articles	Enhancing	SMP	Forecast	Competitor	Positioning	Multiple	Profitability	NPB &	SBU	Proforma	Target	Target	Cost of	Efficiency	Sustained	Sustained	
Total	Experiential	Cash Flow	Error	Analysis	Analysis	Regression	Analysis	Trends	Analysis	Analysis	Profit	Portfolio	Production	Analysis	Student	Student	
	Learning	Analysis	Impact					Analysis			Pricing	Analysis	Analysis		Engagement	Engagement	
MKT 391 Spring 2021 Marketing DSS Article Downloads																	

DSS PACKAGE USAGE EXPERIENCE SURVEY

The Qualtrics online survey on DSS Package Usage Experience was developed and deployed at the end of the Spring 2021 semester. A link to the online survey was posted on the course website at the end of the 'Report & Present' phase. Participants were informed about the survey and the access link on the course website. As anticipated, participants are busy with end-of-semester projects including team presentations and handouts, submission of team presentation grading sheets and peer evaluation grading sheets with justification of scores, and the individual SMP report (worth 30% of the course grade) which replaces the final exam. Consequently, participants were informed that the Qualtrics survey would remain open for one week after the date of the final exam. Eleven participants (33.33%) completed the DSS Package Usage Experience survey during this period of intense activity.

The DSS Package Usage Experience survey covered dss package (a) usage by simulation phase, (b) usage frequency, (c) usefulness, (d) recommended introduction sequence in future semesters (co-creation of value), (e) attribute ratings, (f) effectiveness, (g) usage experience pros and cons, and (h) value-added to the learning experience.

DSS PACKAGE USAGE BY SIMULATION PHASE

The 11 survey respondents indicated that they used several of the dss packages during both the "Compete" and "Report & Present" phases of the simulation competition. Given the wide array of graphics and Excel-based dss packages available, participants were advised to (a) prioritize the dss packages as they were introduced in class, (b) apply the dss packages they deemed essential to address the problems and issues faced by the team, and (c) share their findings with team members throughout the semester.

The interactive online Product Positioning Map (PPM) graphics package was used by all 11 (100%) of the respondents during the "Compete" phase, and by 8 (72.7% of the 11) respondents during the "Report & Present" phase after the competition. The PPMs can be interactively generated for either the current period, every period, every 2-periods, or every 4-periods. The PPM graphics package is used to segment, target, differentiate, and position each of the 9 SBUs focused on potential heavy-user segments determined via sample psycho-geo-demographic segmentation data and external research. In addition, the PPM graphics package is used to prepare (a) a weekly writing assignment on positioning analysis for 3 SBUs, (b) the team presentation, and (c) the individual Strategic Market Plan (SMP) Report (see exhibit 9).

The interactive online Product Portfolio Analysis (PPA) graphics package was used by 9 (81.8% of the 11) respondents during the "Compete" phase, and by 7 (63.6%) respondents during the "Report & Present" phase after the competition. This graphics package generates the Boston Consulting Group (BCG) Growth Share Matrix (GSM) and Growth Gain Matrix (GGM) for all competing teams based on team performance results, and is used by to assess team and competitor SBU portfolios, and to prepare (a) two weekly writing assignments that assess the strength of team and competitor SBU portfolios, (b) the team presentation, and (d) the individual SMP Report (see exhibit 9).

The Excel-based dss packages were used to varying degrees during both the "Compete" and "Report & Present" phases of the simulation competition. The Market Share Analysis package was used by 6 (54.5% of the 11) respondents during the "Compete" phase, and by 7 (63.6%) respondents after the competition. The next group of dss analysis packages in descending order of usage by respondents are Competitor Analysis, Multiple Regression Data Matrices, Normative Position of Brands, SBU Analysis, Target Portfolio Analysis, and Cost of Production Analysis. Next, in descending order of usage are Proforma Analysis, Profitability Analysis, and Quality Analysis followed by Marketing Mix Analysis, Profit Forecasting Analysis, and Sources & Uses of Cash Analysis. The final group of packages in descending order of usage by respondents are Breakeven Analysis, Forecast Error Impact Analysis, Ratios Analysis, and Manufacturing/Shipping Analysis (see exhibit 9).

The interactive online PPM and PPA graphics packages were more intensively used during the "Compete" phase of the simulation competition. However, the Excel-based dss packages were used more heavily during the "Report & Present" phase (see exhibit 9). Some Excel-based dss packages such as the Normative Position of Brands (NPB) package and the Target Portfolio Analysis package were introduced after the end of competition, and are used by participants to prepare the team presentation and the individual SMP Report.(see exhibit 9).

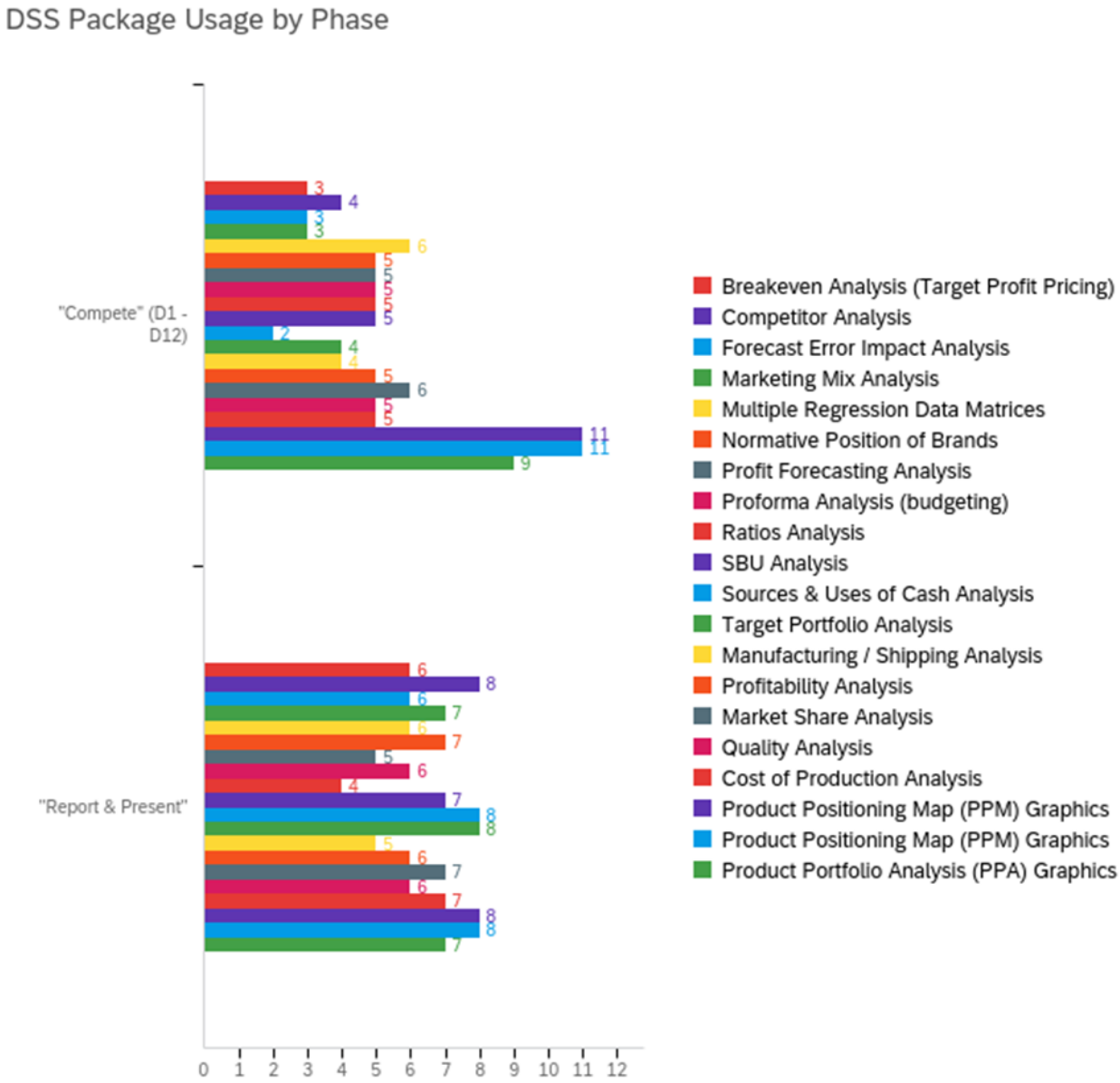
DSS PACKAGE USAGE FREQUENCY

Respondents indicated the number of times they used each dss package on a three-point ('not used', '1 to 5 times', '6 or more times' scale. The interactive online graphics packages were used heavily (6 or more times) by several respondents. The interactive online Product Positioning Map (PPM) graphics package, was used 1 to 5 times by 7 (63.6% of the 11) respondents, and 6 or more times by 4 (36.4%) respondents. The interactive online Product Portfolio Analysis (PPA) graphics package, was used 1 to 5 times by 5 (45.5%) respondents, and 6 or more times by 5 (45.5%) respondents In addition, the Excel-based dss analysis and performance packages were used moderately (1 to 5 times) by several respondents (see exhibit 10).

DSS PACKAGE USEFULNESS

Respondents indicated the usefulness of each dss package on a three-point ('not useful', 'moderately useful', 'very useful') scale. All 11 respondents found the interactive online Product Portfolio Analysis (PPA) and Product Positioning Map (PPM) graphics packages useful. Both graphics packages were found very useful by 9 (81.8%) respondents, and moderately useful by 2

EXHIBIT 9
DSS Package Usage by Simulation Phase

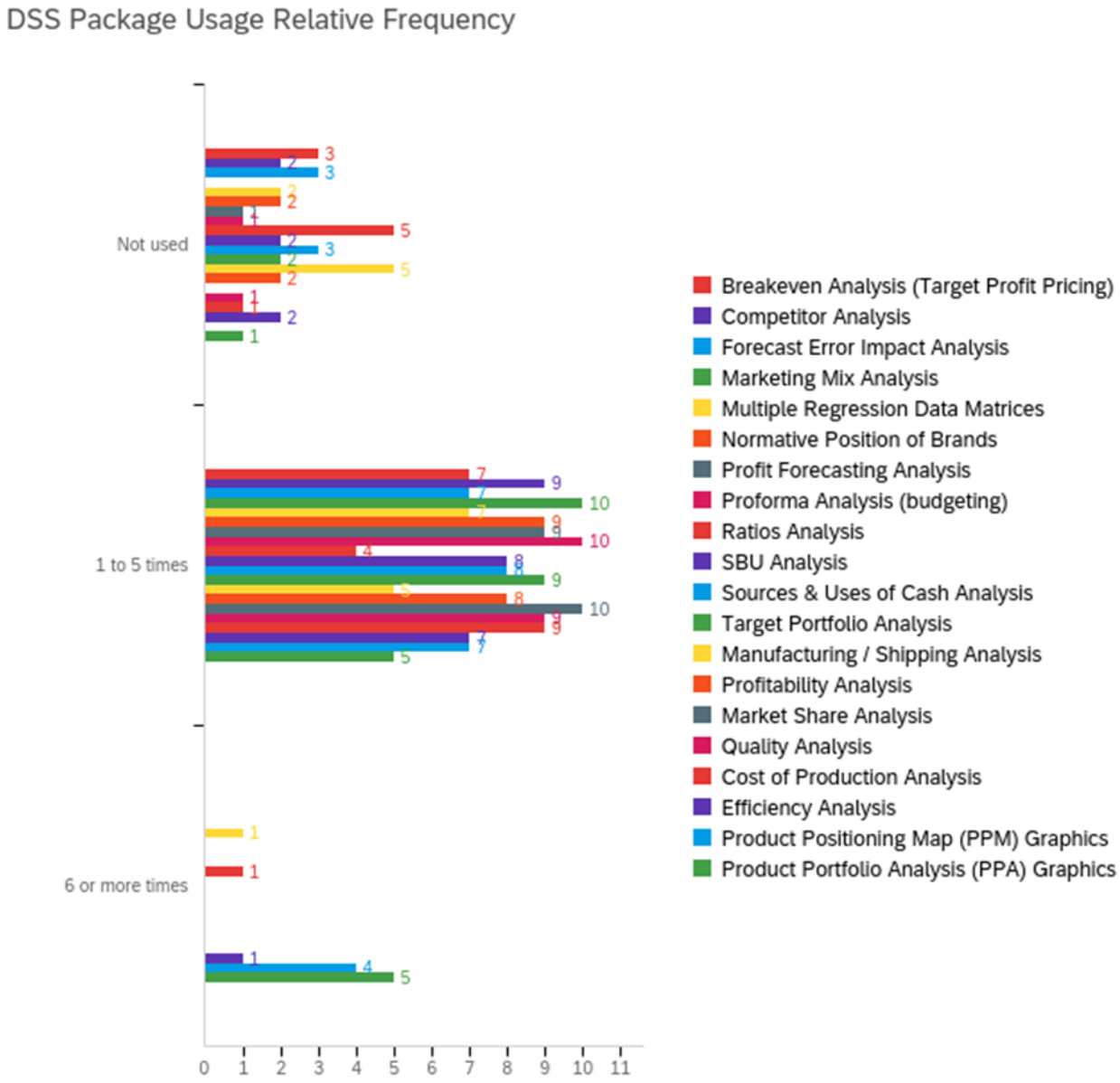


(18.2%) respondents (see exhibit 11).

The dss performance packages were rated useful by the respondents. The Cost of Production Analysis package was rated very useful by 6 (54.5%) respondents, and moderately useful by 4 (36.4%) respondents. The Profitability Analysis, Market Share Analysis, and Efficiency Analysis packages were each rated very useful by 6 (54.6%) respondents, and moderately useful by 3 (27.3%) respondents. The Quality Analysis package was found very useful by 5 (45.45%) respondents, and moderately useful by 3 (27.3%) respondents (see exhibit 11).

The dss analysis packages were also rated useful by the respondents. The Proforma Analysis package was rated very useful by 5 (45.5%) respondents, and moderately useful by 5 (45.5%) respondents. The Normative Position of Brands Analysis package was rated very useful by 5 (45.5%) respondents, and moderately useful by 4 (36.4%) respondents. The Competitor Analysis, Forecast Error Impact Analysis, Marketing Mix Analysis, and SBU Analysis packages were each rated very useful by 3 (27.3%) respondents, and moderately useful by 7 (63.6%) respondents. The Manufacturing/Shipping Analysis package was rated very useful by 3 (27.3%) respondents, and moderately useful by 5 (45.5%) respondents. The Sources & Uses of Cash Analysis package was rated very useful by 2 (18.2%) respondents, and moderately useful by 7 (63.6%) respondents. Lastly, the Breakeven Analysis package was rated very useful by 1 (9.1%) respondent, and moderately useful by 9 (81.8%) respondents (see exhibit 11).

EXHIBIT 10
DSS Package Usage Frequency



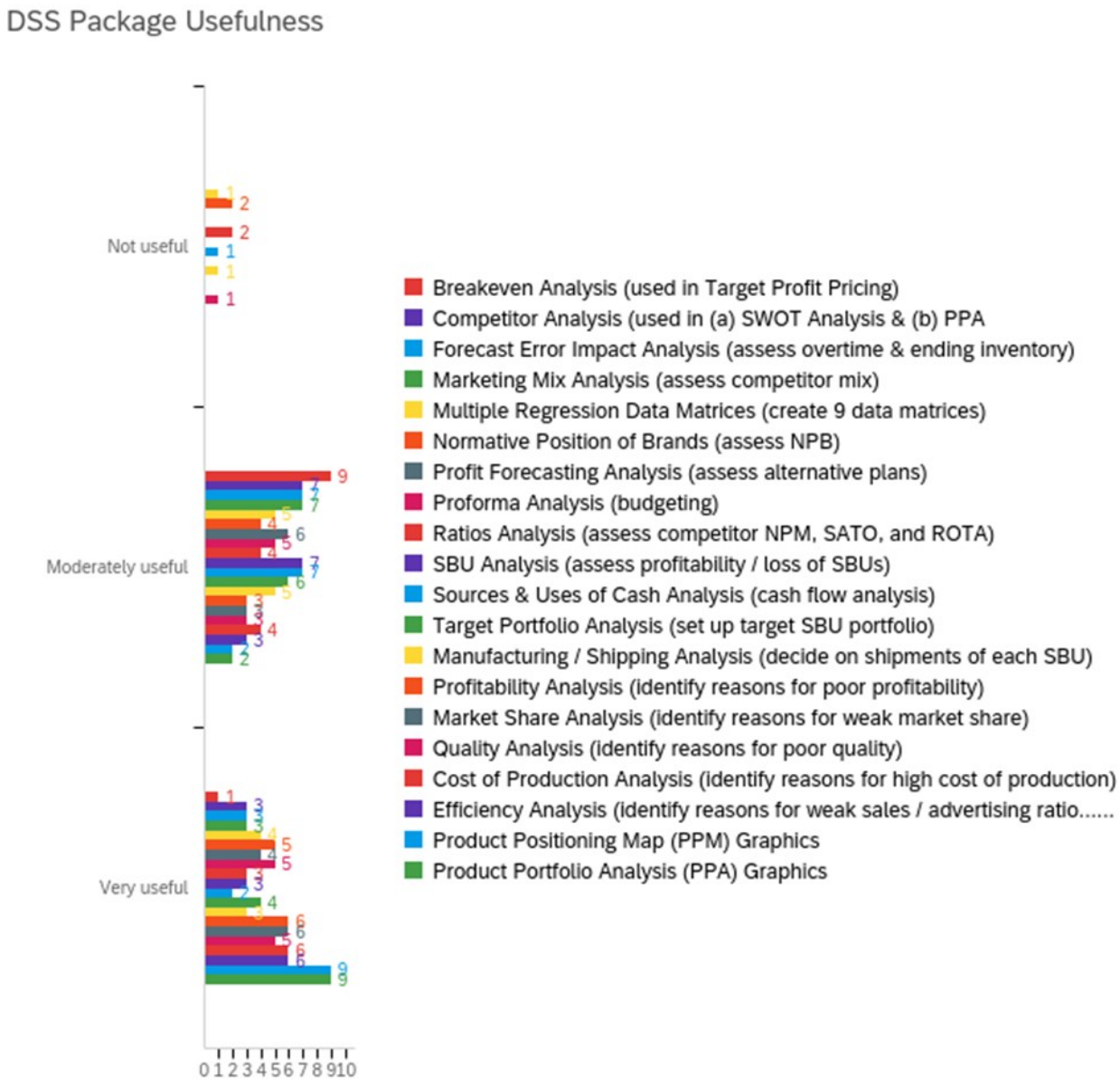
DSS ANALYSIS PACKAGE INTRODUCTION SEQUENCE

Course participants have consistently requested that the underlying marketing concepts and the decision support packages be introduced and covered prior to the start of competition. Given semester time limitations, dss packages are progressively introduced and covered during the simulation competition. Respondents indicated their desired dss package introduction and coverage sequence (see exhibit 12).

In order of priority (for the first 5 of 20 dss package introduction rankings), the Breakeven Analysis package used in Target Profit Pricing was selected by 8 (72.7%) respondents, the Competitor Analysis package by 7 (63.6%) respondents, the Product Portfolio Analysis (PPA) graphics package by 5 (45.5%) respondents, the Product Positioning Map (PPM) graphics package by 4 (36.4%) respondents, the Forecast Error Impact Analysis package by 4 (36.4%) respondents, the Manufacturing/Shipping Analysis package by 3 (27.3%) respondents, the Profitability Analysis package by 3 (27.3%) respondents, the Profit Forecasting Analysis package by 2 (18.2%) respondents, the Proforma Analysis package by 2 (18.2%) respondents, and the Sources & Uses of Cash Analysis package by 2 (18.2%) respondents (see exhibit 12).

DSS PERFORMANCE PACKAGE INTRODUCTION SEQUENCE

EXHIBIT 11
DSS Package Usefulness



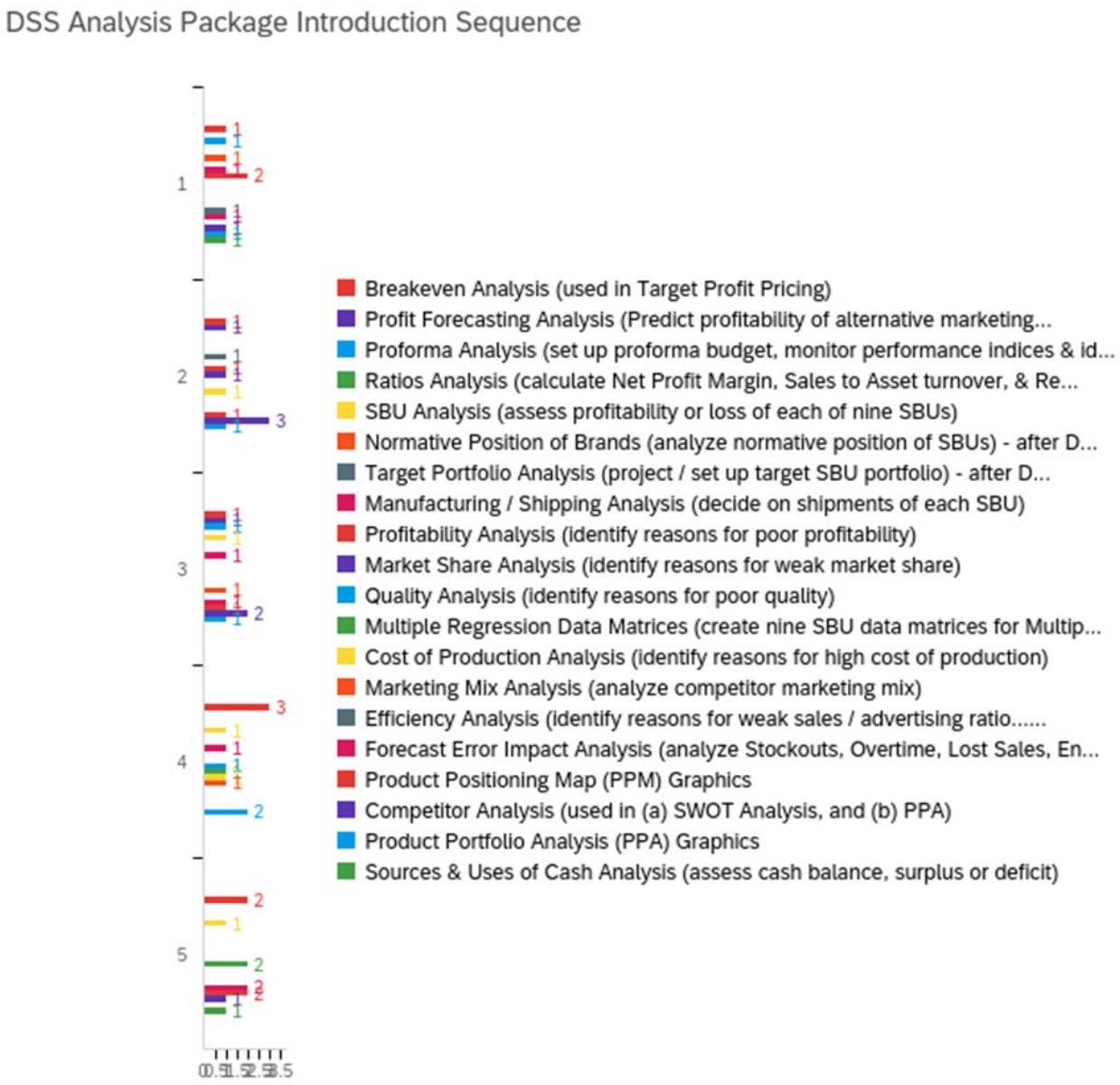
Next, respondents indicated their desired dss performance package introduction and coverage sequence (see exhibit 13). In order of priority, the Profit Performance Package was selected in first place by 10 (90.9% of 11) respondents, followed by the Quality Analysis package selected by 10 (90.9%) respondents, the Cost of Production Analysis package by 9 (81.8%) respondents, the Market Share Analysis package by 8 (72.7%) respondents, the Efficiency Analysis package by 6 (54.6%) respondents, the Advertising Awareness Index package by 4 (36.4%) respondents, and the Industry Effort Index package by 2 (18.2%) respondents (see exhibit 13).

DSS PACKAGE ATTRIBUTES

Respondents rated dss package online access, 24x7 accessibility, flexibility, auto data extraction from simulation results, cell comments, detailed nature by period and by SBU, ease of use, and interactive feature of each of the two graphics packages on a 3 -point ('poor,' 'average,' 'good') scale.

The online access, availability, and flexibility of the dss packages were rated 'good' or 'average' by a substantial majority of the 11 respondents. Online access was rated 'good' by 5 (45.5% of 11) respondents, 'average' by 4 (36.4%) respondents, and 'poor' by 2 (18.2%) respondents. Availability of dss packages was rated 'good' by 7 (63.6% of 11) respondents, 'average' by 3 (27.3%) respondents, and 'poor' by 1 (9.1%) respondent. Flexibility of dss packages was rated 'good' by 7 (63.6% of 11) respondents, and 'average' by 4 (36.4%) respondents (see exhibit 14).

EXHIBIT 12
DSS Analysis Package Introduction Sequence

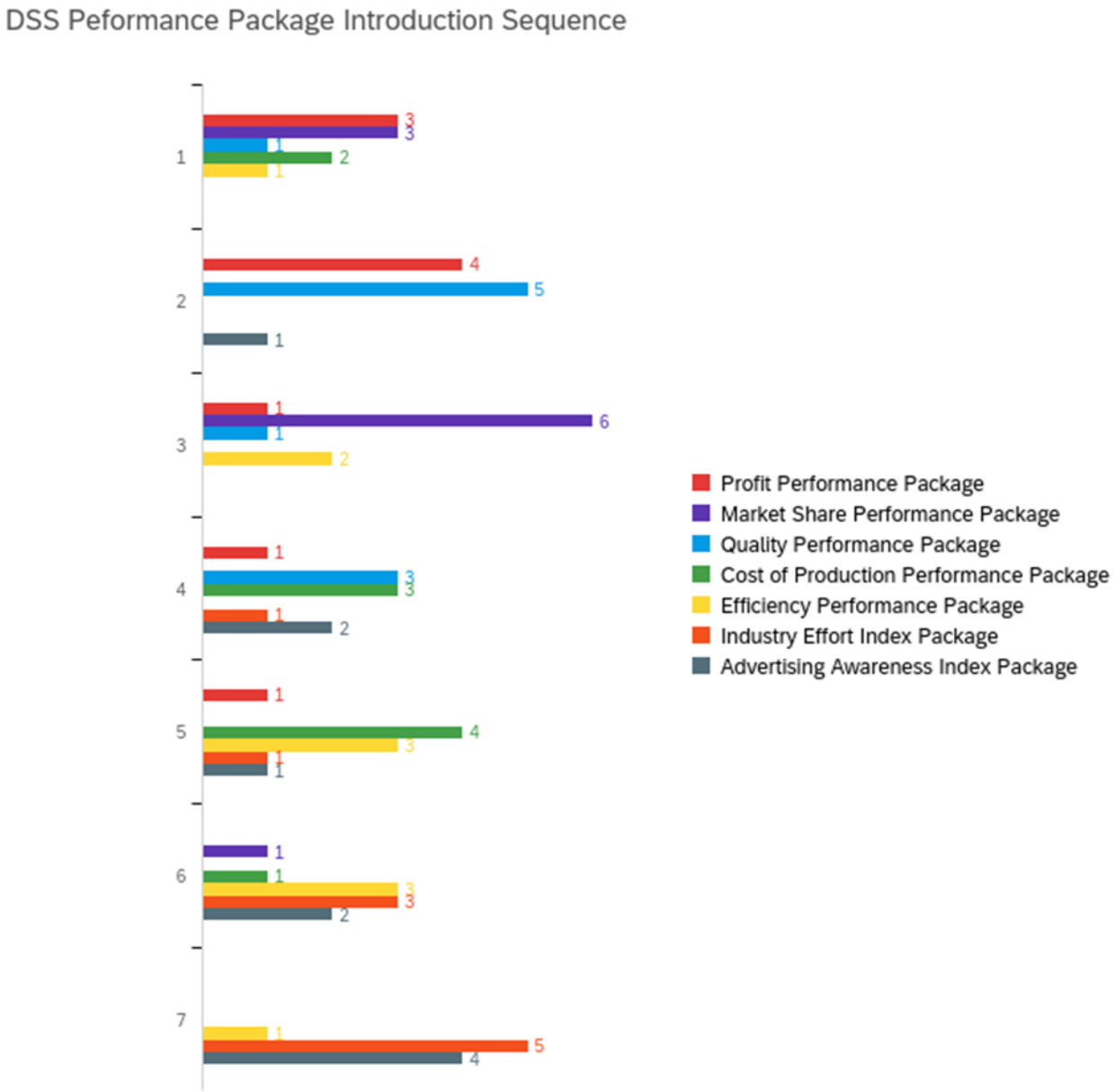


A majority of the respondents rated the auto-extract feature, explanatory cell comments, and detailed nature of the dss packages as either 'good' or 'average.' The auto-extract feature of the dss packages, which either eliminates or reduces the extent of user data entry and potential data entry error, was rated 'good' by 6 (54.6% of 11) respondents, 'average' by 3 (27.3%) respondents, and 'poor' by 2 (18.2%) respondents. The explanatory cell comments in the dss Excel workbooks were rated 'good' by 5 (45.5% of 11) respondents, 'average' by 5 (45.5%) respondents, and 'poor' by 1 (9.1%) respondent. The detailed nature of the specific dss Excel workbooks by period and by SBU was rated 'good' by 6 (54.6% of 11) respondents, and 'average' by 5 (45.5%) respondents (see exhibit 14).

The ease of use of the dss Excel workbooks was rated 'good' by 4 (36.4% of 11) respondents, 'average' by 4 (36.4%) respondents, and 'poor' by 3 (27.3%) respondents. The uniform distribution of ratings for ease of use perhaps reflects the incompatibility of some dss package macros with respondent notebook operating systems. This initial experience with the dss packages resulted in deferred usage (see exhibit 14).

The interactive online PPM and PPA) graphics packages were both rated 'good' by 7 (63.6% of 11) respondents, 'average' by 3 (27.3%) respondents, and 'poor' by 1 (9.1%) respondent. These web-based interactive graphics packages, which generate the product positioning maps and BCG strategic grids (GSM and GGM matrices) online based on the simulation results, were used by participants on a regular basis.

EXHIBIT 13
DSS Performance Package Introduction Sequence



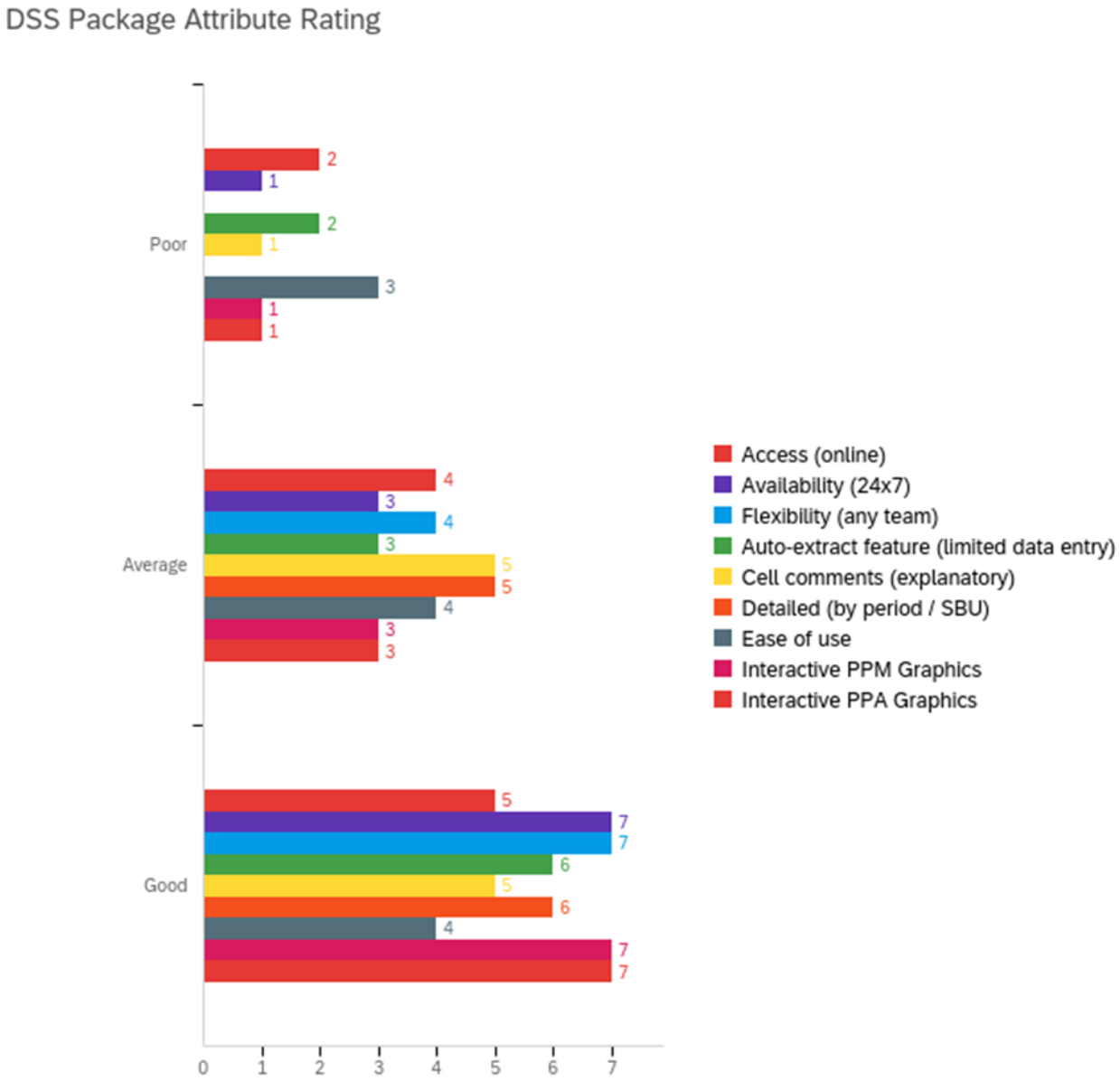
DSS PACKAGE EFFECTIVENESS

Respondents rated the effectiveness of the dss packages on a 3-point (‘not helpful,’ ‘moderately helpful,’ ‘very helpful’) scale. The marketing dss packages were rated in terms of their effectiveness in performing market segmentation, targeting, differentiation, positioning, pricing, demand forecasting, manufacturing/shipping, forecast error tracking, budgeting, cash flow analysis, monitoring performance, analyzing performance, and strategic market planning (see exhibit 15).

When implementing market segmentation, the dss packages were rated ‘very helpful’ by 4 (40% of 10) respondents, and‘moderately helpful’ by 5 (50%) respondents. In targeting heavy-user segments, the dss packages were rated ‘very helpful’ by 5 (50%) respondents, and ‘moderately helpful’ by 3 (30%) respondents (see exhibit 15). When differentiating their offerings, the dss packages were rated ‘very helpful’ by 5 (50% of 10) respondents, and ‘moderately helpful’ by 4 (40%) respondents. In positioning each of their 9 SBUs, the dss packages were rated ‘very helpful’ by 7 (70%) respondents, and ‘moderately helpful’ by 2 (20%) respondents. Further, the dss packages were rated ‘very helpful’ by 6 (60%) respondents, and ‘moderately helpful’ by 4 (40%) respondents in price-setting (see exhibit 15).

In demand forecasting, the dss packages were rated ‘very helpful’ by 4 (40% of 10) respondents, and ‘moderately helpful’ by 4 (40%) respondents. When deciding on manufacturing/shipments, the dss packages were rated ‘very helpful’ by 7 (70% of 10) respondents, and ‘moderately helpful’ by 4 (20%) respondents. In tracking forecast errors, the dss packages were rated ‘very helpful’ by 3 (30% of 10) respondents, and ‘moderately helpful’ by 4 (40%) respondents (see exhibit 15). The Forecast Error Impact package

EXHIBIT 14
DSS Package Attribute Rating



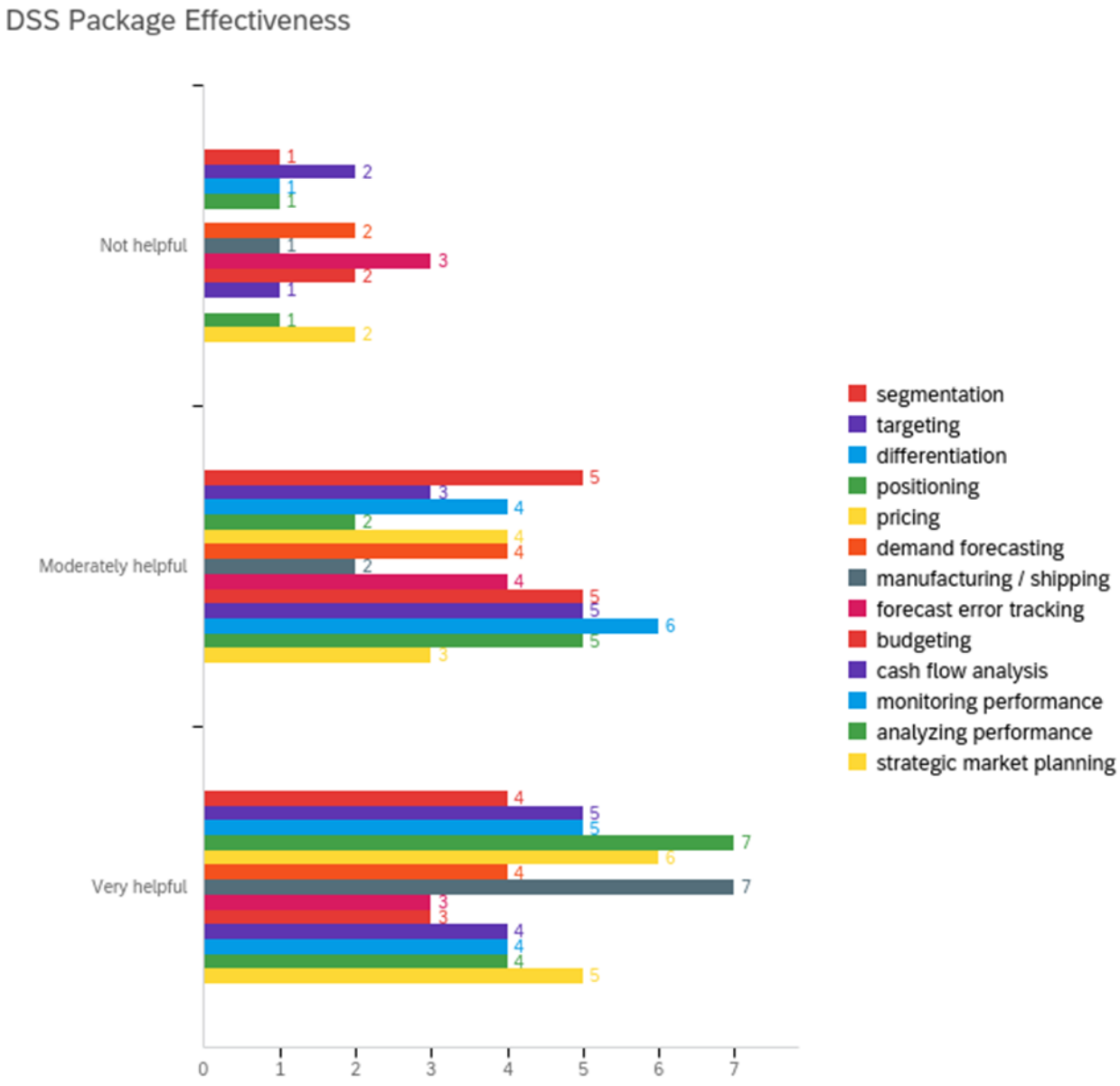
provides participant teams feedback on the dollar impact of stockouts, overtime production, ending inventory, storage costs, and lost sales. It is not used in making shipment decisions.

When implementing budgeting, the dss packages were rated 'very helpful' by 3 (30% of 10) respondents, and 'moderately helpful' by 5 (50%) respondents. In performing cash flow analysis, the dss packages were rated 'very helpful' by 4 (40% of 10) respondents, and 'moderately helpful' by 5 (50%) respondents (see exhibit 15). When monitoring team performance the dss packages were rated 'very helpful' by 4 (40% of 10) respondents, and 'moderately helpful' by 6 (60%) respondents. In analyzing team performance, the dss packages were rated 'very helpful' by 4 (40% of 10) respondents, and 'moderately helpful' by 5 (50%) respondents (see exhibit 15). Lastly, in strategic market planning, the heart of the course and the simulated experience, the dss packages were rated 'very helpful' by 5 (50% of 10) respondents, and 'moderately helpful' by 3 (30%) respondents (see exhibit 15).

DSS PACKAGE USAGE EXPERIENCE

Respondents commented on the pros and cons of their dss package usage experience. Comments on pros included "a decent template to work off of or ideas and procedures of the simulation and creation of the presentation," "a little intimidating at first, but very easy to use once I got the first package down because they are all very similar," and "all were very useful but definitely could be easier to download and put data into."

EXHIBIT 15
DSS Package Effectiveness



Cons included "at times they would crash or not work. Somewhat finicky," "packages are not compatible with a chrome-book, so I was not able to run them on my personal laptop," and "interactive platform that shows shifts in decisions will better than excel sheets."

These comments on dss package usage experience highlight the importance of (a) dss package compatibility across different hardware and software platforms (notebook/tablet computers and operating systems), and (b) integration of dss packages with simulations. Integration of dss systems with business simulations will (a) simplify the process of identifying and accessing relevant simulation data for the purpose of decision-making, and (b) provide a seamless user experience.

VALUE-ADDED TO LEARNING EXPERIENCE

Finally, 10 respondents assessed the value-added to their learning experience by topic coverage, COMPETE simulation, PPM graphics package, PPA graphics package, dss packages, online access, in-class demo, 'hands-on' sessions, trimmed dss demo videos, and handouts repository on a 3-point ('no value added,' 'moderate value added,' 'substantial value added') scale (see exhibit 16).

The interactive online 'product positioning map (PPM)' and 'product portfolio analysis (PPA)' graphics packages were both rated providing 'substantial value-added' by 7 (70% of 10) respondents, and 'moderate value-added' by the remaining 3 (30%)

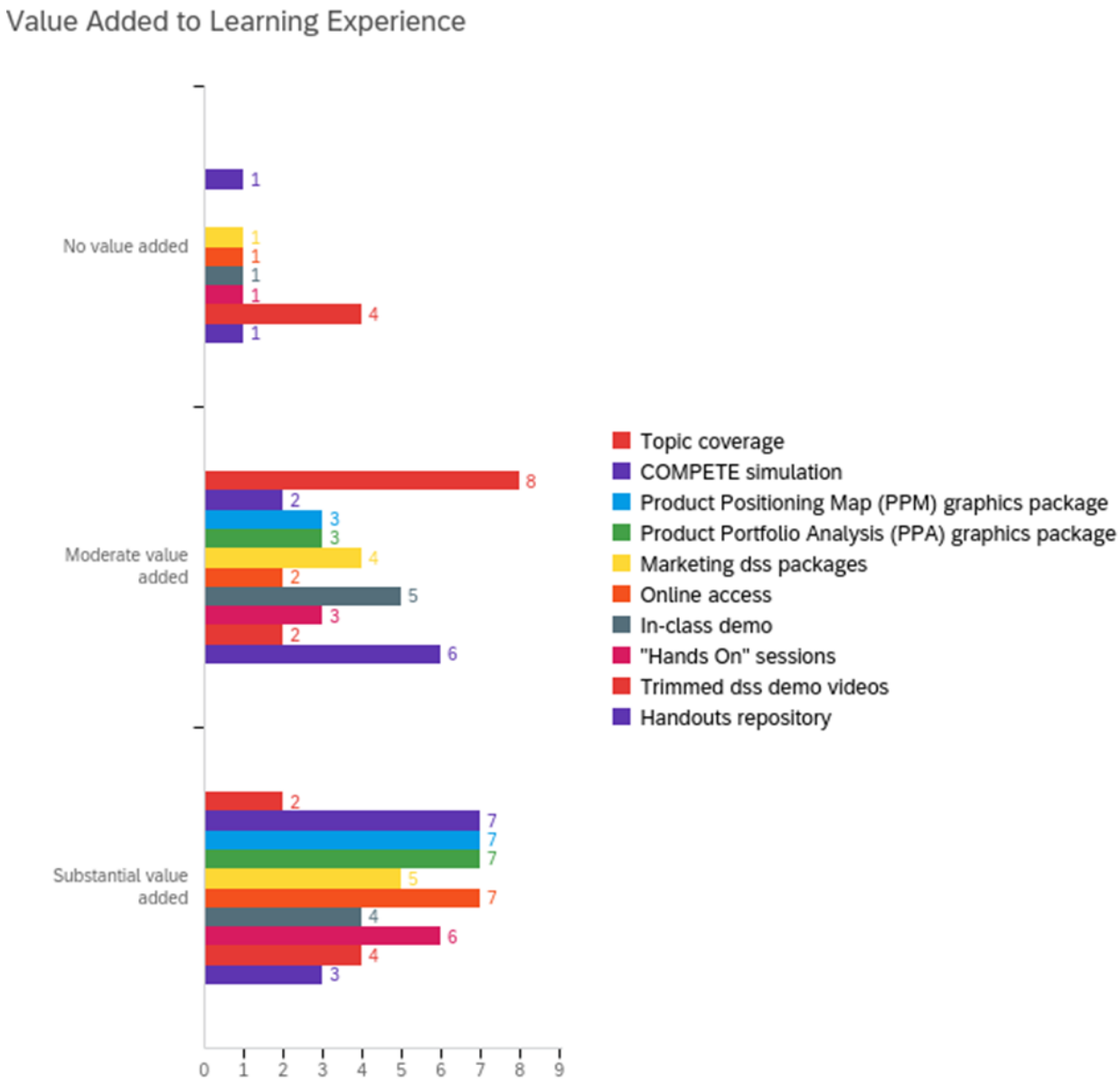
respondents. These responses clearly illustrate the significance of easy-to-use, 24/7 accessible, interactive, online, graphic decision support system (dss) packages, especially when they are tied to, and reflect, the simulation results with minimal data entry (see exhibit 16).

The 'COMPETE simulation' and 'online access' were both rated providing 'substantial value-added' by 7 (70% of 10) respondents, and 'moderate value-added' by 2 (20%) respondents (see exhibit 16). The easy-to-access, interactive, batch-processed, team-based, competitive marketing simulation with online data entry, and online results retrieval via password-protected team accounts, motivate participants to learn in order to excel. Some participants have expressed that winning the competition is as important, if not more important than the course grade. One perceptive past participant expressed "now we understand why we learn what we learn."

The 'hands-on sessions' were rated as providing 'substantial value-added' by 6 (60% of 10) respondents, and 'moderate value-added' by 3 (30%) respondents (see exhibit 16). These 'hands-on sessions' coupled with scaffolding by the instructor are significant motivators as participants understand how to identify problems related to sub-par performance, diagnose the underlying reasons, and take corrective action. In addition, they overcome initial barriers in learning how to use the dss packages, in order to gain valuable insights and make better-informed decisions.

The 'marketing dss packages' were rated as providing 'substantial value-added' by 5 (50% of 10) respondents, and 'moderate value-added' by 4 (40%) respondents (see exhibit 16). These Excel-based dss workbooks, while helpful to participants,

EXHIBIT 16
Value Added to Learning Experience



required them to (a) download the dss package, (b) unzip (open) the folder (not needed on Mac notebooks), (c) overwrite the dummy data files with their own team data (results file/s), (d) launch the program file to extract team and competitor data from the simulation results workbook via external linking, (e) analyze the extracted team and competitor data, and (f) make better-informed team decisions.

Some issues faced by participants and reported by them include (a) incompatibility with their notebooks, tablets, operating systems, and/or applications, (b) inability to get the Visual-Basic macros to function with their operating systems, and (c) inconsistent treatment (attribute ratio or rotation) of graphics when downloaded to Word documents for submission with weekly writing assignments, and individual SMP report.

The 'in-class demo' was rated as providing 'substantial value-added' by 4 (40% of 10) respondents, and 'moderate value-added' by 5 (50%) respondents (see exhibit 16). These in-class demos are used to explain the related concepts as well as the purpose, significance, assumptions, usage and limitations of each dss package.

The 'trimmed dss demo videos' were rated as providing 'substantial value-added' by 4 (40% of 10) respondents, and 'moderate value-added' by 2 (20%) respondents (see exhibit 16). While website tracking revealed that these dss demo videos were extensively used by course participants to review the relevant concepts and usage procedures, the presence of thumb-nail images of a few participants concerned some participants, the department chair, dean, and university registrar. This problem was finally resolved by a very knowledgeable ABSEL colleague. Based on website tracking marketing dss videos were downloaded 304 times during the Spring 2021 semester.

The online course 'handouts repository' was rated as providing 'substantial value-added' by 3 (30% of 10) respondents, and 'moderate value-added' by 6 (60%) respondents (see exhibit 16). Course handouts include PowerPoint presentation handouts, course website map that illustrates locations of available resources, and other course materials.

Finally, 'Topic coverage' was rated as providing 'substantial value-added' by 2 (20% of 10) respondents, and 'moderate value-added' by 8 (80%) respondents (see exhibit 16). The topics covered include introduction to the simulation, financial statements and simulation results, external research resources, a quality research process, market segmentation and positioning, forecasting, sales forecast model building, strategic market planning using the BCG GSM and GGM matrices, as well as comparison of BCG and GE strategic grids and the PIMS project findings.

In summary, the majority of respondents perceive value-added to their learning experience by the use of easy-to-use, 24/7 accessible, interactive, online, graphic decision support system (dss) packages, especially when they are tied to and reflect the simulation results with minimal data entry.

CONCLUSION

Aggregate website tracking of in-class and out-of-class (a) page-views, (b) dss package downloads, and (c) prior ABSEL paper downloads on a daily basis indicate sustained student engagement during all phases of the simulation competition. In addition, server log tracking of team logins on a daily basis, and in-class and outside-class generation of (a) product positioning map graphics and (b) strategic market planning (BCG Growth Share and Growth Gain Matrix) grid graphics packages on a daily basis indicate continuing server usage during the semester.

Individual participant responses to the online DSS Package Usage Experience survey covered (a) dss package usage by simulation phase, (b) dss package usage frequency, (c) dss package usefulness, (d) recommended dss package introduction sequence in future semester (co-creation of value), (e) dss package attribute rating, (f) dss package effectiveness, (g) dss package usage experience pros and cons, and (h) value-added to the learning experience. The limited response rate reflects the end-of-semester survey launch, when students are busy with end-of-semester projects, feedback forms, and graduation formalities. The open-ended responses on the dss package usage experience highlight potential areas of improvement.

Competing participant teams demonstrated heightened in-class engagement and motivation via regular attendance, palpable classroom energy level, questions, active discussion, and usage of decision support packages. Sustained outside-class team engagement, captured via the simulation server log, correlated with team performance. In addition, sustained outside-class student engagement was captured via website tracking of visitor activity on simulation and course webpages, and download activity monitored during the semester. Further, peer-evaluated one-hour team presentations that demonstrate usage of the decision support packages, seven individual weekly writing assignments on sections of the individual Strategic Market Plan, and the one-hour team presentation, foster engagement and learning.

Participant responses to the online DSS Package User Experience Survey indicate that they used the interactive online PPA and PPM graphics packages and several of the dss packages during the simulation competition. Both graphics packages were found useful. They rated the dss packages useful in performing market segmentation, targeting, differentiation, positioning, pricing, demand forecasting, manufacturing/shipping, forecast error tracking, budgeting, cash flow analysis, monitoring performance, analyzing performance, and strategic market planning.

Finally, they indicated that the COMPETE simulation, PPM graphics package, PPA graphics package, dss packages, online

access, in-class demo, 'hands-on' sessions, trimmed dss demo videos, and the online handouts repository added value to their learning experience.

The results support the National Research Council (2003) prescriptions, and suggest that dss-induced user autonomy, relatedness and competence foster engagement. In addition, the results support the JDCS Model (Karasek 1979, Karasek et al. 1982) propositions, and suggest that heavy workload demands under time pressure on simulation participants can be offset by range of decision-making freedom via 24/7 availability and access of dss packages tied to the simulation, and the amount of scaffolding support provided.

In summary, early introduction of dss packages and trimmed dss videos tied to the business simulation, 24/7 access, scaffolding support, and phased simulation debriefing augment participant engagement. The ability to monitor results, identify problems, use relevant dss packages, understand the reasons for sub-par performance, take corrective action and improve performance, heightens interest, motivation, confidence and understanding among simulation participants.

Given the current AACSB International mission "to foster engagement, accelerate innovation, and amplify impact in business education," and the enhanced engagement and motivation of simulation participants that has resulted from use of phased simulation debriefing and use of dss packages, ABSEL is well positioned to play a leading role in the innovation and dissemination of simulation and experiential learning pedagogy in business education.

REFERENCES

AACSB International (2020a). *2020 Guiding Principles and Standards for AACSB Business Accreditation*. Tampa, FL: The Association to Advance Collegiate Schools of Business. (Date Updated: July 1, 2021).

AACSB International (2020b). *2020 Interpretive Guidance for AACSB Business Accreditation.* Tampa, FL: The Association to Advance Collegiate Schools of Business. (Date Updated: July 1, 2021).

AACSB International (2013). *Eligibility procedures and accreditation standards for business accreditation*. Tampa, FL: The Association to Advance Collegiate Schools of Business. (Last revised: July 1, 2018).

Aaker, D.A. (2014). *Strategic market management*, 10th ed. New York, NY: Wiley.

Aaker, D.A. & Moorman, C. (2018), *Strategic market management*, 11th ed., New York, NY: Wiley.

Affisco, J.F. & Channin, M.N. (1989). The Impact of Decision Support Systems on The Effectiveness of Small Group Decisions - An Exploratory Study. In T. Pray & J. Wingender (Eds.), *Developments in Business Simulation and Experiential Learning*, 16, 132-5.

Affisco, J.F. & Channin, M.N. (1990). The Impact of Decision Support Systems On The Effectiveness of Small Group Decisions – Revisited. In J. Wingender & W. Wheatley (Eds.), *Developments in Business Simulation and Experiential Exercises*, 17, 1-5.

Anderson, P.H. & Lawton, L. (2004). Simulation Exercises and Problem Based Learning: Is There a Fit? In: A. Feinstein & D. Potosky (Eds.), In: A. Feinstein & D. Potosky (Eds.), *Developments in Business Simulation and Experiential Learning*, 31, 183-189.

Anderson, P.H. & Lawton, L. (1997). Demonstrating the learning effectiveness of simulations Where we are and where we need to go. In: L. Kelley & P. Sanders (Eds.), *Developments in Business Simulation and Experiential Exercises*, 24, 68-73.

Anderson, P.H. & Lawton, L. (2005). The Effectiveness of a Simulation Exercise For Integrating Problem-Based Learning In Management Education. In: R. Ledman (Ed.), *Development in Business Simulation and Experiential Learning*, 32, 10-18.

Argyris, C. (1971). Management Information Systems: The Challenge to Rationality and Emotionality. *Management Science*, 17, 6, (February), B275.

Argyris, C. (1970). *Intervention Theory and Method: A Behavioral Science View*. Reading, MA: Addison-Wesley.

Axelson, R.D. & Flick, A. (2011). Defining student engagement. *Change: The Magazine of Higher Learning*, 43 (1), 38-43.

Badgett, T.F., Brenenstuhl, D.C. & Marshal, W.J. (1978). An Analysis of Performance In Simulation Games Compared to Performance On Structured Course Criteria: A Case Study. In: D. Brenenstuhl & S. Certo (Eds.), *Exploring Experiential Learning: Simulations and Experiential Exercises*, 5, 32-38.

Bandura, A. (1977). Self–efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.

Bandura, A. (1977). *Social Learning Theory.* Englewood Cliffs, NJ: Prentice Hall.

Bigge, M. L. (1982). *Learning Theories For Teachers (4th ed.)*. New York, NY: Harper & Row.

Bloom, B.S. (1956). *Taxonomy of Educational Objectives: Handbook/Cognitive Domain*. New York, NY: David McKay.

Bowen, D.D. (1987). Developing a Personal Theory of Experiential Learning: A Dispatch From the Trenches. *Simulation and Games*, 18 (2), 192-206.

Burch, G.F., Batchelor, J.H., Heller, N.A., Shaw, N., Kendall, W., & Turner, B. (2014). "Experiential Learning – What Do We Know? A Meta-Analysis of 40 Years of Research. In: A. Smith et al. (Eds.), *Development in Business Simulation and Experiential Learning*, 41, 179-183.

Burns, A.C. & Bush, R.J. (1991). Using DIS 'n DAT as a Decision Support System for a Marketing Simulation Game. In: W. Wheatley & S. Gold (Eds.), *Developments in Business Simulation and Experiential Exercises*, 18, 5-10.

Cannon, H., Carroll, P.G. & Seamons, B.L. (1993). Using The IdeaFisher Idea Generation System as a Decision Support System in Marketing Strategy Courses. In: S. Gold & P. Thavikulwat (Eds.), *Developments in Business Simulation and Experiential Exercises*, 20, 27 -30.

Carini, R.M., Kuh, G.D. & Klein, S.P. (2006). Student engagement and student learning: testing the linkages. *Research in Higher Education*, 47 (1), 1-32.

Connell, J.P & Wellborn, J.G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M.R. Gunnar & L.A. Stroufe (Eds.), *Self-Processes in Development: Minnesota Symposium on Child Psychology*, (23, 43-77). Hillsdale, NJ: Erlbaum.

Deci, E.L., Connell, J.P., & Ryan, R.M. (1985). A motivational analysis of self-determination and self-regulation in the classroom. In C. Ames, & R.E. Ames (Eds.), *Research On Motivation in Education*, *The Decision Milieu* (2, 13-52). San Diego, CA: Academic Press.

Duch, B., Gron, S., & Allen, D., eds. (2001). *The Power of Problem-Based Learning, A Practical 'How To' For Teaching Undergraduate Courses in Any Discipline*. Sterling, VA: Stylus Publishing, LLC.

Faria, A.J. (2006). *COMPETE: A Dynamic Marketing Simulation*, 5th ed. Windsor, CA: University of Windsor.

Faria, A.J. (1998). Business Simulation Games: Current Usage Levels – An Update. *Simulation & Gaming*, 29 (3), 295-308.

Faria, A.J. (2001). The Changing Nature of Business Simulation/Gaming Research: A Brief History. *Simulation & Gaming*, 31 (1), 97-110.

Faria, A.J. (2000). The Changing Nature of Simulation Research: A Brief ABSEL History. In: D. Page & L. T. Snyder (Eds.), *Developments in Business Simulations and Experiential Learning*, 27, 84-90.

Forgionne, G.A. (1988). Building Effective Decision Support Systems. *Business*, 38 (1), 19-30.

Fritzsche, D.J., Rodich, G.W. & Cotter, R.V. (1987). Integrating Decision Support Systems and Business Games. In: L. Kelley & P. Sanders (Eds.), *Developments in Business Simulation and Experiential Exercises*, 14, 63-66.

Geddes, B.C., Cannon, H.M., Cannon, J.N., & Feinstein, A. (2015). Developing educational strategies for experiential learning: An application of service dominant logic from marketing. In: A. Smith et al. (Eds.), *Developments in Business Simulation & Experiential Learning,* 42, 226–232.

Geddes, B.C., Cannon, H.M. & Cannon, J.N. (2018). Addressing The Crisis in Higher Education: An Experiential Analysis. In: J.A. Smith et al. (Eds.), *Development in Business Simulation and Experiential Learning*, 45, 265-279.

Gold, S.C. & Pray, T.F. (1990). Modeling Demand in Computerizing Business Simulations. *Guide to Business Gaming and Experiential Learning*, Chapter 8, 117-138. East Brunswick/Kogan Page, London: Nichols/GP Publishing.

Gopinath, C. & Sawyer, J.E. (1999). Exploring The Learning From An Enterprise Simulation. *The Journal of Management Development*, 18 (5), 477-89.

Gosen, J. (2004). The Influence of Variables Easily Controlled By The Instructor/Administrator On Simulation Outcomes: In Particular, The Variable, Reflection. In: A. Feinstein & D. Potosky (Eds.), *Developments in Business Simulation & Experiential Learning,* 31, 318-324.

Gosenpud, J.J. (1987). Research on Predicting Performance in the Simulation. In: L. Kelley & P. Sanders (Eds.), *Developments in Business Simulation & Experiential Exercises*, 14, 75-79.

Gosenpud, J.J. & Washbush, J.B. (1991). Predicting Simulation Performance: Difference Between Groups and Individuals. In: W. Wheatley & S. Gold (Eds.), *Development In Business Simulation & Experiential Exercises*, 18, 44-48.

Geber, B. (1994). Let the Games Begin. *Training*, (April, Suppl.), 10-15.

Green, D. & Faria, A.J. (1995). Are good strategies consistently good?, In: J. Overby & A. Patz (Eds.), *Developments in Business Simulations and Experiential Exercises,* 22, 31-37.

Grondlund, N. E. (1970). *Measurement and Evaluation in Teaching*. New York, NY: Macmillan.

Grove, S.J., Pickett, G.H. & Williams, R.H. (1986). The Subjective Side of The Decision Support System A Pitfall For The Panacea. In: A. Burns & L. Kelley (Eds.), *Developments in Business Simulation and Experiential Learning*, 13, 170-173.

Guthrie, J.T. & Anderson, E. (1999). Engagement in reading: Processes of motivated, strategic, knowledgeable and social readers. In Guthrie, J.T. and Alvermann, D.E. (Eds.) *Engaged Reading: Processes, Practices and Policy Implications* (17-45). New York, NY: Teachers College Press.

Halpin, A.L. (2006). A Decision Support System For Planning Sales, Production, and Plant Addition With Manager: A Computer Simulation. In: A. Smith (Ed.), *Developments in Business Simulation and Experiential Learning*, 33, 289-293.

Handelsman, M.M., Briggs, W.L., Sullivan, N. & Towler, A. (2005). A Measure of College Student Course Engagement. *The Journal of Educational Research*, 98, 3 (Jan./Feb.), 184-191.

Hemmasi, M. & Graf, L. A. (1991). Educational Perspectives of Business Simulation Gaming: A Comparative Study of Student and Practitioner Perspectives. In: W. Wheatley & S. Gold (Eds.), *Developments in Business Simulation and Experiential Exercises*, 18, 53-56.

Hemmasi, M. & Graf, L.A. (1992). Managerial skills acquisition: A case for using business policy simulations. *Simulation & Gaming*, 24 (4), 298-410.

Hoberman, S. & Mailick, S. (1992). *Experiential Management Development*. New York, NY: Quorum.

Hogan, K. & Pressley, M. (1997). *Scaffolding Student Learning: Instructional Approaches and Issues*, *(Advances in Teaching and Learning Series)*. Cambridge, MA: Brookline Books.

Honaiser, E. and Sauaia, A.C.A. (2006). Decision Support System For Demand Forecasting in Business Games. In: A. Smith (Ed.), *Developments in Business Simulation and Experiential Learning*, 33, 223-231.

Hoover, J.D. (1974). Experiential learning: Conceptualization and definition. In: J. Kenderdine & B. Keys (Eds.), *Simulations, Games and Experiential Learning Exercises*, 1, 31-35.

Hoover, J.D., Giambatista, R.C., & Tribble, L. (2016). An Organizational Development Approach to Experiential Learning With Millennials. In: A. Smith et al. (Eds.), *Development in Business Simulation and Experiential Learning*, 43, 27-31.

Hoover, J.D. & Whitehead, C.J. (1975). An experimental-cognitive methodology in the first course in management: Some preliminary results. In: R. Buskirk (Ed.), *Simulation Games and Experiential Learning in Action*, 2, 25-30.

Hornaday, R.W. (2001). Sex Composition, Cohesion, Consensus, Potency and Performance of Simulation Teams. In: K. Pittenger & M. J. Vaughn (Eds.), *Developments in Business Simulation and Experiential Learning*, 28, 102-105.

Hornaday, R.W. & Wheatley, W.J. (1986). Four Factors Affecting Group Performance In Business Policy Simulations. *Developments in Business Simulation & Experiential Exercises*, 13, 17-21.

Johnson, Johnson & Golden (1997). Multinational Business Gaming: Is Gender Important? In Wolfe, J. & Keys, B.J. (Eds.) *Business Simulation Games and Experiential Learning in International Business Education*. New York: International Business Press, 65 -82.

Kachra, A. & Schnietz, K. (2008). The Capstone Strategy Course: What Might Real Integration Look Like?, *Journal of Management Education*, 32 (4), 476-508.

Kahn, W.A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal.* 33, 692-724.

Karasek, R.A., Jr. (1979). Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*, 24, (2) June, 285-308.

Karasek, R.A., Jr., Triantis, K.P. & Chaudhry, S.S. (1982). Coworker and Supervisor Support as Moderators of Association Between Task Characteristics and Mental Strain. *Journal of Occupational Behavior,* 3, 181-200.

Kayes, D.C. (2002). Experiential Learning and Its Critics: Preserving the Role of Experience in Management Learning and Education. *Academy of Management Learning and Education*, 1 (2), 137-49.

Keys, J.B. & Biggs, W.D. (1990). A Review of Business Games. in: Gentry, J.W. (1990) Ed., *Guide to Business Gaming and Experiential Learning*, Chapter 5, 48-73. East Brunswick/Kogan Page, London: Nichols/GP Publishing.

Keys, J.B., Burns, O.M., Case, T.L. & Wells, R.A. (1986). Performance and Attitudinal Affects of a Decision Support Package in a Business Game. In: A. Burns & L. Kelley (Eds.), *Developments in Business Simulation and Experiential Exercises*, 13, 221-226.

Keys, J.B. & Wolfe, J. (1990). The Role of Management Games and Simulations in Education and Research, Yearly Review. *Journal of Management*, 16 (2), 307-336.

Knotts, U.S. Jr., & Keys, J. B. (1997). Teaching Strategic Management With a Business Game. *Simulation and Gaming*, 28, (4), 377-94.

Kolb, D. (1984). *Experiential Learning: Experience As a Source of Learning and Development.* Englewood Cliffs, NJ: Prentice-Hall.

Kulkarni, B. & Sivaraman, V. (2013). Using Business Simulations To Introduce Business Concepts. In: A. Smith et al. (Eds.), *Developments in Business Simulation & Experiential Learning,* 40, 393-400.

Lane, D.C. (1995). On a Resurgence of Management Simulations and Games. *Journal of the Operational Research Society*, 46, 604-625.

Little, J.D.C. (1979). Decision Support Systems for Marketing Managers. *Journal of Marketing*, 43 (Summer), 9-26.

Lynch, R.D. and Michael, T.A. (1989). Predicting Individual Decision Making Performance in a Business Simulation. In: T. Pray & J. Wingender (Eds.), *Developments in Business Simulation & Experiential Exercises*, 16, 182-187.

Luthans, K.W., Luthans, B.C. & Palmer, N.F. (2016). A Positive Approach to Management Education: The Relationship Between Academic PsyCap And Student Engagement. *Journal of Management Development*, 35 (9) 1098-1118.

Magnuson, R.A. and Good, D.C. (2017). It's More Than Just A Simulation: Deepening and Broadening Student Learning By Using A Business Enterprise Simulation As A Platform. In: J.A. Smith et al. (Eds.), *Development in Business Simulation and Experiential Learning*, 44, 95-105.

Markulis, P.M. & Strang, D.R. (1985). The Use of Decision Support Systems (DSS) and Operations Research/ Management Science (OR/MS) Techniques to Enhance the Learning Experience of Students Participating in Computerized Simulations. In: J. Gentry & A. Burns (Eds.), *Developments in Business Simulation and Experiential Learning*, 12, 30-34.

Miller, C. (2013). The Gamification of Education. *Development in Business Simulation and Experiential Learning*, 40, 196-200.

Miller, H.E., Schumann, P.L., Anderson, P.H., & Scott, T.W. (1998). Maximizing learning gains in simulations: Lessons from the training literature. *Developments in Business Simulation and Experiential Exercises*, 25, 217–223.

Mitri, M., Karimalis, G., Cannon, H., & Yaprak, A. (1998). The Market Access Planning System (MAPS): Computer-Based Decision Support System For Facilitating Experiential Learning in International Business. In: N. Leonard & S. Morgan (Eds.), *Developments in Business Simulation and Experiential Learning*, 25, 101-107.

Moon, J. (2004). *A Handbook of Reflective and Experiential Learning: Theory and Practice.* London, UK: Routledge Palmer.

Mosenthal, P.R. (1999). Understanding engagement: Historical and political contexts. In J.T. Guthrie & D.F. Alvermann (Eds.) *Engaged Reading: Processes, Practices and Policy Implications.* (pp. 1-16). New York, NY: Teachers College Press.

Muhs, W.F. & Callen, R.W. (1984). Incorporating Decision Support Systems Into Management Simulation Games: A Model and Methodology. In: D. Currie & J. Gentry (Eds.), *Developments in Business Simulation and Experiential Exercises*, 11, 261-266.

National Research Council, Committee on Increasing High School Sudents' Engagement and Motivation to Learn (2003). *Engaging Schools. Fostering High School Students' Motivation to Learn.* Washington, D.C.: The National Academic Press.

Nulsen, R.O., Jr., Faria, A.J. & Roussos, D.S. (1994). The Use of Decision Support Systems With a Marketing Simulation: The Future is Now. In: P. Thavikulwat & J. Overby (Eds.), *Developments in Business Simulation and Experiential Exercises*, 21, 169.

Nulsen, R.O., Roussos, D.S. & Faria, A.J. (1993). Using Lotus 1-2-3 to Complete a Triple Play In a Simulated Competition. In: S. Gold & P. Thavikulwat (Eds.), *Developments in Business Simulation and Experiential Exercises*, 20, 132**.**

Palia, A.P. (2012). Assessing Brand Portfolio Normative Consistency & Trends With The Normative Position of Brands & Trends Package. In: A. Smith (Ed.), *Developments in Business Simulation and Experiential Learning*, 39, 47-74.

Palia, A.P. (2010). Checking Financial Balance of Target Brand Portfolio With the Strategic Market Plan Cash Flow Package. In: A. Smith (Ed.), *Developments in Business Simulation and Experiential Learning*, 37, 157-169.

Palia, A.P. (1995). Comparative Static Analysis With the COMPETE PPA Package: A Strategic Market Planning Tool. In: J. Overby & A. Patz (Eds.), *Developments in Business Simulation and Experiential Exercises*, 22, 130-131.

Palia, A.P. (2017). Developing a Strategic Target SBU Portfolio With the Target Portfolio Package. In: J.A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 44, 167-184.

Palia, A.P. (2019). Enhancing Experiential Learning Via Phased Simulation Debriefing. In: J.A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 46, 222-257.

Palia, A.P. (2005). Online Cumulative Simulation Team Performance Package. In: R. Ledman (Ed.), *Developments in Business Simulation and Experiential Learning*, 32, 233-9.

Palia, A.P. (2006). Online Market Test Laboratory With The MINISIM Program. In: A. Smith (Ed.), *Developments in Business Simulation and Experiential Learning*, 33, 238-41.

Palia, A.P. (2009). Online Marketing Control With The Strategic Business Unit Analysis Package. In: A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 36, 91-101.

Palia, A.P. (2004). Online Sales Forecasting With the Multiple Regression Analysis Data Matrices Package. In: A. Feinstein & D. Potosky (Eds.), *Developments in Business Simulation and Experiential Learning*, 31, 180-182.

Palia, A.P. (1989). Sensitivity Analysis With The COMPETE IFPS/Personal Student Analysis Package: A Marketing Decision Support System. In: T. Pray & J. Wingender (Eds.), *Developments in Business Simulation and Experiential Exercises*, 16, 141-144.

Palia, A.P. (1991). Strategic Market Planning With the COMPETE Product Portfolio Analysis Package: A Marketing Decision Support System. In: W. Wheatley & S. Gold (Eds.), *Developments in Business Simulation and Experiential Exercises*, 18, 80-83.

Palia, A.P. (2008). Target Profit Pricing With The Web-Based Breakeven Analysis Package. In: A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 35, 197-204.

Palia, A.P. (2011). Tracking Forecast Error Type, Frequency and Magnitude With The Forecast Error Package. In: E. Murf et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 38, 45-58.

Palia, A.P. (2018). The Quest for Marketing Effectiveness & ROI With the Efficiency Analysis Package. In: J.A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 45, 105-127.

Palia, A.P. & De Ryck, J.D. (2015). Assessing Competitor Strategic Business Units With the Competitor Analysis Package. In: A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 42, 52 -68.

Palia, A.P. & De Ryck, J.D. (2014). Implementing Marketing Control With the Web-based Profitability Analysis Package. In: A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 41, 64 -84.

Palia, A.P. & De Ryck, J.D. (2016). Improving Profitability Via Cost Control With the Cost of Production Performance Package. In: A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 43, 166-101.

Palia, A.P. & De Ryck, J.D. (2013). Repositioning Brands With the Web-based Product Positioning Map Graphics Package. In: A. Smith et al. (Eds.), *Developments in Business Simulation and Experiential Learning*, 40, 207-228.

Palia, A.P. & De Ryck, J.D. & Mak, W.K. (2003). Interactive Online Positioning With the Web-based Product Positioning Map Graphics Package. In: S. Pillutla & A. Feinstein (Eds.), *Developments in Business Simulation and Experiential Learning*, 300, 202-206.

Palia, A.P. & De Ryck, J.D. & Mak, W.K. (2002). Interactive Online Strategic Market Planning With the Web-based Boston Consulting Group (BCG) Matrix Graphics Package. In: M.J. Vaughn & S. Pillutla (Eds.), *Developments in Business Simulation and Experiential Learning*, 29, 140-142.

Palia, A.P., Mak, W.K., & Roussos, D.S. (2000). Facilitating Learning in the New Millennium With The COMPETE Online Decision Entry System (CODES). In: D. Page & L.T. Snyder (Eds.), *Developments in Business Simulation and Experiential Learning*, 27, 248-249.

Parks, D. & Lindstrom, G. (1995). Achieving Higher Levels of Learning in the Business Policy and Strategy Course Through Integration of a Business Simulation. *Journal of Management Education,* 19 (2), 219-27.

Peach, B.E. (1996). Enhancing Simulation Learning Through Objectives and Decision Support Systems. In: A. Patz & J. Butler (Eds.), *Developments in Business Simulation and Experiential Exercises*, 23, 61-67.

Perkins, D. (1999). The many faces of constructivism. *Educational Leadership*, 6-11.

Rahn, D. (2009). Enhancing Web-Based Simulations With Game Elements For Increased Engagement. In: A. Smith et al. (Eds.), *Development in Business Simulation and Experiential Learning*, 36, 303-311.

Rollag, K. & Parise, S. (2005). The Bikestuff Simulation: Experience The Challenge of Organizational Change, *Journal of Management Education*, 29 (October), 769-787.

Schellenberger, R.E., Hill, J.A., & Keusch, R.B. (1989). An exploratory study of the effect of strategic emphasis in management games on attitudes, interest, and learning in the Business Policy course. In: T. Pray & J. Wingender (Eds.), *Developments in Business Simulations and Experiential Exercises*, 16, 178.

Schellenberger, R.E., Hill, J.A., & Keusch, R.B. (1983). MANSYM III Decision Support System Demonstration. In: L. Graf & D. Currie (Eds.), *Developments in Business Simulation and Experiential Exercises*, 10, 69-71.

Shane, B. & Bailes, J. (1986). A Decision Support System For Capital Funds Forecasting. In: A. Burns & L. Kelley (Eds.), *Developments in Business Simulation and Experiential Exercises*, 13, 216-220.

Sherrell, D., Russ, K.R. & Burns, A.C. (1986). Enhancing Mainframe Simulations via Microcomputers: Designing Decision Support Systems. In: A. Burns & L. Kelley (Eds.), *Developments in Business Simulation and Experiential Exercises*, 13, 207-211.

Silas, E., Wildman, J. & Piccolo, R. (2009). Using Simulation-Based Training to Enhance Management Education, *Academy of Management Learning & Education*, 8 (4), 559-573.

Skinner, E.A., Wellborn, J.G., & Connell, J.P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology*, 82, 22-32.

Skinner, E.A. & Belmont, M.J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85, 571-581.

Spence, L. (2001). Problem based learning: Lead to learn, learn to lead. *Problem Based Learning Handbook*. University Park, PA: Penn State University, School for Information Sciences and Technology.

Sprague, R.H., Jr. (1980). A Framework for the Development of Decision Support Systems. *Management Information Systems Quarterly*, 4 (December), 1-26.

Teach, R.D. (1990). Designing Business Simulations. in: Gentry, J.W. (1990) Ed., *Guide to Business Gaming and Experiential Learning*, Chapter 7, pp. 93-116. East Brunswick/Kogan Page, London: Nichols/GP Publishing.

Teach, R.D. & Govahi, G. (1988). The role of experiential learning and simulation in teaching management skills. In: P. Sanders & T. Pray (Eds.), *Developments in Business Simulation & Experiential Exercises*, 15, 65-71.

Teach, R.D. & Govahi, G. (1993). The Role of Classroom Techniques in Teaching Management Skills. *Simulation & Gaming*, 24, 429-445.

Thiagarajan, S. (1994). How I Designed a Game – and Discovered the Meaning of Life. *Simulation & Gaming*, 25, 529-535.

Thomas, A. S. (1998). The Business Policy Course: Multiple Methods For Multiple Goals. *Journal of Management Education*, 22 (4), 484-97.

Thompson, T.A., Purdy, J. M., & Fandt, P. M. (1997). Building a Strong Foundation: Using a computer simulation in an Introductory Management Course, *Journal of Management Education*, 31 (3), 418-434.

Vargo, S. L. & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68, (1), 1–17.

Vargo, S. L. & Lusch, R. F. (2014). Inversions of service-dominant logic. *Marketing Theory,* 14, 239–248.

Washbush, J.B. & Gosenpud, J.J. (1991). Student attitudes about policy course simulations. In: W. Wheatley & S. Gold (Eds.), *Developments in Business Simulations and Experiential Exercises*, 18, 105-110.

Wellington, W. & Faria, A.J. (2006). Validating business simulations: Do simulations exhibit natural market structures? In: A. Smith (Ed.), *Developments in Business Simulation and Experiential Learning,* 33, 118-123.

Wheatley, W., Hornaday, R. & Hunt, T. (1988). Developing Strategic Management Goal Setting Skills. *Simulation and Gaming*, 19 (2), 173-85.

Wingender, J. and Wurster, J. (1987). Oil And Gas Well Investment Analysis Using The Lotus 1-2-3 Decision Support System. In: L. Kelley & P. Sanders (Eds.), *Developments in Business Simulation and Experiential Exercises*, 14, 245-249.

Winsett, C., Foster, C., Dearing, J. & Burch, G. (2016). The Impact of Group Experiential Learning on Student Engagement. *Academy of Business Research Journal*, 3, 7-17.

Wolfe, J. (1997). The Effectiveness of Business Games in Strategic Management Course Work, *Simulation and Gaming*, 28 (4), 360-76.

Wolfe, J. (1990). The evaluation of computer-based business games: Methodology, findings, and future needs. In J.W. Gentry (Ed.), *Guide to Business Gaming and Experiential Learning* (279–300), New York: Nichols/ GP Publishing.

Wolfe, J. (1985). The teaching effectiveness of games in collegiate business courses. *Simulation and Games*, 16, 251-288.

Wolfe, J. & Roberts, C. R. (1993). A Further Study of the External Validity of Business Games: Five-Year Peer Group Indicators. *Simulation & Gaming*, 24, 21-23.

Wolfe, J. & Gregg, J. (1989). On the Efficacy of Managerial Decision Support Systems in a Business Gaming Environment. *Proceedings of the International Simulation and Gaming Association*, 102-109.

Wood (1987). Meta-analytic Review of Sex Differences in Group Performance. *Psychological Bulletin*, 102, 53-71.

Woodruff, C.K. (1992). A Graphics Application Extension For A Simulated Decision Support System Environment. In: J. Gosenpud & S. Gold (Eds.), *Developments in Business Simulation and Experiential Eercises*, 18, 5-10.

Zantow, K., Knowlton, D. S. & Sharp, D. C. (2005). More Than Fun And Games: Reconsidering The Virtues Of Strategic Management Simulations. *Academy of Management Learning and Education*, 4 (4), 451-58.