Deploying the User-Centered Systems Development Model to Assess IS Products used to launch Entrepreneurship Ventures

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Raymond Collier Jr.
Kennesaw State University, Grad-Student
Rcollie7@students.kennesaw.edu

Dr. Kathaleena Edward-Monds
Albany State University, Professor of IS
Kathaleena.monds@asurams.edu

Abstract

More and more people are looking to start entrepreneurship ventures. Companies have developed Information Systems (IS) tools to assist them through the steps of starting or building a business. Products like GoVenture, BizCafe, Industry Masters and the DIY Toolkit are a few examples of IS products that exist. This research study investigated eight IS-based products to assess whether these products met the UserCentered Systems Development (UCSD) requirements of iterative product design. The research generated a list of IS products, a list of product features, and a quick-reference tool to be used by those launching or growing a business. Differentiations found in each product; addressed single vs. multiple business options, end-user decision making, task interdependence, and criteria-based constraints. A discovery was that simulations or demonstrations (demos) are not as robust in providing 'real' or 'actual' examples in order to build consumer confidence. However, the process garnered helpful information for budding entrepreneurs.

Introduction

The aim of this study was to investigate which information systems (IS) products exist that can be used by current (or future) entrepreneurs and deploy the User-Centered Systems Design (UCSD) Model to assess whether these products are usable, useful, and accessible by various end-user populations. The field of Human-Computer Interaction (HCI), or Human-Center Computing (HCC) as it is often called, is a growing discipline. Understanding the value of new product design is essential to understanding how these products are used in the market. The goal of this research study was to provide a framework from which the application of these IS products are matched with the appropriate end-user population, all in an effort to maximize efficient and effective entrepreneurial initiatives.

In reference to an HCI text, useful systems always find a way to support its user's objectives and end goals (Smith-Atakan, 2006). For something to be useful means that the user can actually achieve the task they want to. For example, if the user wants to play a game, the system will then support the structure of gaming for the user's entertainment. Useful systems are measured by the number of tasks an end-user can complete (quantitative). In reference to the same HCI text, a system is usable if it is possible to achieve those tasks that an individual or user of the system wants to perform both easily and enjoyably. For example, one gaming system might be easy and pleasant to use, while another might be difficult and frustrating to use. The key take-away is that both systems allow the user their ability to achieve objectives but the way in which it is done is different (Smith-Atakan, 2006). Usable systems are measured by the quality of the end-user experience (qualitative). Finally, accessibility is garnered from a product if it is possible to be used by a wide-array of end-users (Smith-Atakan, 2006).

Literature Review

Human-Computer Interaction is a multi-disciplinary (psychology, computer science, information systems, graphic design, etc.) field that aims to understand how humans interact with hardware and software. HCI emphasizes iteration in the design of such information systems (IS) products. Iteration is important because it ensures that end-users are provided with a product that meets their intended requirements. All too often, developers create products that they assume will meet the requirements of the intended audience. Unfortunately, however, not including the end-user at every step of the design process diminishes the possibility of getting it right.

This research study will deploy the UCSD model to apply to various IS products used by individuals seeking to become entrepreneurs. In other words, this study will help bridge the gap that exists between the human and the technology by providing recommendations of products for various entrepreneurship levels. In order to compete, companies must maintain a competitive advantage by gaining the confidence of the end-user. To navigate the study, three steps of the UCSD process were taken into consideration: Task Analysis, Requirements Definition, and Design.

<u>Hierarchical Task Analysis (Task Analysis)</u>

The tasks of a system are arguably one of the most important components to a system when thinking about the end-user. The difficulty of tasks, are what determine whether an end-user will enjoy, use again, and recommend others to use a system. Including hierarchical task analysis in the basis of this research on information systems products agrees with previous research on information systems. The improvement of task-related performance is a highly recognizable concern when it comes to information systems (Avital & Te'eni, 2009). The efficiency of tasks can have a direct effect on the accuracy and productivity that an end-user experiences while using an information systems product. Computers and their systems hold an expectation over them thought to enhance our creativity, place one in the land of opportunity, and embark on an unchartered territory (Avital & Te'eni, 2009). If this is to happen, the hierarchical tasks of systems must be of a certain ease that allow an end-user to complete, opening the door for that frontier to be explored. Information system products used for entrepreneurial gain can serve as that enhancement.

Hierarchical task analysis and information systems products go hand-in-hand. Task analysis skills are detrimental in the ever changing world of information systems (Musa et. al. 2005). Though their study was about students and their ability as well as their skills to assess different tasks, the end-user can easily be included, among this population. The authors used Systems Thinking and Goldratt's Thinking Processes in their analyses of enhancing decision-making. Systems Thinking, a methodology that has been used and applied in many different settings as well as domains for years, can be helpful. Information systems allow the user to think through the overall system and attach those tasks with the end-result they are seeking (Musa, et. al., 2005). Goldratt's Thinking Processes, described by the authors as "relatively new", is proven useful in problem areas of constraints, manufacturing, banking, and healthcare systems (Musa, et. al., 2005). The results and conclusions of the study show how training in both methodologies, Systems Thinking and Goldratt's Thinking Processes, can be beneficial when engaging with information systems.

User groups and their ability to complete tasks vary. A system's tasks are only as good as the end-user that is able to complete them. Knowledge has been expressed in how a contemporary user environment is possible, more times than not, to have various information systems available for the same or particular task; hence, the reasoning behind this research; to explore the different information systems available for entrepreneurs at different levels for different users to ascertain (Sun, 2012). Various characteristics of a system can affect the way an end-user is drawn to or away from a product. User characteristics, system experiences, and task situations all of which are affected by the human subject, attitude object, and behavioral context of how and when an end-user accepts the technology (Sun, 2012). In an attempt to conclude the research, insight is given on what ultimately can make a system successful or not successful outlining the ability to tailor system development and management to various task contexts and different user groups (Sun, 2012).

The degree to which tasks are dependent upon each other can garner the implementation of information systems and its training success (Sharma. & Yetton, 2007). Research on how training on information systems implementation success is possible to have a positive function of both technical complexity and task interdependence has been garnered (Sharma & Yetton, 2007). Conclusions, from the research, can be made that the more training gained before implementation, the better the success of the tasks flowing together while keeping the hierarchical order. The assembly in turn, creates a favorable experience, through use and completion of the tasks, for the end-user. The study provides a vast array of research and knowledge on the role of task interdependence. The significant findings of the analysis show how the level of task interdependence is possible to have a strong effect on implementation success. (Sharma & Yetton, 2007) Interpretation of the analysis allows for the thought that the higher the task interdependence, the more training and more difficult the task will be for the end-user to complete. When considering task interdependence the level should coincide with the intended user.

When technology is able to provide tasks for end-users that are easily and quickly accessible to complete and meet the intended use, the system can be deemed efficient. If it is able to provide useful attributes for the end-user, the impact of performance will be positive (Cane & McCarthy, 2009). Cane and McCarthy makes the profound statement: "performance impacts will occur when the technology meets the user's needs and provides features that support the fit of the requirements of the task" (Cane & McCarthy, 2009). These impacts are bound to be positive or negative. Negative impacts on performance related to the tasks of a system will more than likely discourage the end-user from using the system while positive impacts will retain their confidence and trust in the system. Positive impacts for end-users using an entrepreneurial information system product can increase the individual's likelihood and ability to succeed in their entrepreneurial venture while negative impacts could deter.

Guidelines and Heuristics (Requirement Gathering)

The requirements gathering phase follows task analysis in the UCSD process. There is logic as to why it follows HTA, in that there must be a hierarchical list of tasks for the system to support before being able to set requirements to them. Requirements gathering is the area where finding out the system needs and what it should potentially do is key (Smith-Atakan, 2006). Designers are able to find the needs of a system and determine its functions by gathering information from potential users and the environment in which the system will be used (Smith-Atakan, 2006). Through choice of interviewing, observing, surveying or analyzing pre-existing systems similar in nature; designers are able to collect information about the nature of the task, intended user-group, and intended circumstances of use (Smith-Atakan, 2006). Requirements gathering provides for a set target for which the system should do while applying usability guidelines and heuristics to the system as well. (Smith-Atakan, 2006).

Research conducted on a hands-on design game that focuses in particular on the structuring of opportunities for user participation in requirements definition can be looked at as an example (Ramiller & Wagner, 2011). The authors admit that it can be difficult to produce systems from an organization standpoint that meets the system's requirements (Ramiller & Wagner, 2011). The 5-step game includes a requirements definition phase which is Step 2. The phase requires that teams be paired off and that each team describe their particular model to the different teams. The effort represents the team defining the requirements of their model. There is validity in that one must know what the system does in order to make the system do it. The design game approaches requirements gathering in a hands-on and more personal way all the while increasing communication which is always useful in creating the requirements of a system.

Requirements were a focused factor in the research on the development of trans-active memory and its uses with informational technology. The research investigated and questioned if various requirements exist for various users, and if so, were these requirements in different stages of trans-active development (Nevo et. al., 2012). The requirements focus shows how requirements-gathering fits into many avenues when providing a product or service for an end-user. There were various requirements gathering techniques that were used in the attempt to provide trans-active memory as an information technology tool. Such techniques include: question and answer, exploration of existing technical capabilities, as well as investigation of meta-memory at different stages of trans-active memory development. (Nevo et. al., 2012). Through the engagement of requirements gathering they were able to provide how and if information technology can support trans-active memory.

There are requirements that can affect the way information is used within information systems. A study within the field introduced the term information requirements definition (IRD). IRD can be defined as developing the correct requirements for the system at hand and doing so through information from users and appropriate stakeholders (Appan, & Browne, 2012). This requirement affects the way information is used and the type of information that is allowed to receive, hold, upload or transmit. The IRD can possibly affect an end-user's overall experience with a system due to restrictions that may be enforced that are beyond the Systems Analyst or Designer's control. The IRD could also be a contributing factor to many of the information usability guidelines and heuristics.

There is sufficient communication between Systems Analysts, Designers, and end-users that must be evident during the requirements gathering phase to ensure that specific tasks are met. Usability guidelines and heuristics, two sub-topics of requirements gathering, place much emphasis on what the Systems Analyst or Designer is able to require of the end-user as well as what the end-user is able to require of the system. Behavioral decision-making, is mentioned within a study which, placing identification on various heuristics or stopping rules (Pitts & Browne, 2004). The requirements determination process is an interactive process including the likes of stakeholders that basically entails validating the requirements of a system. The Analyst has a responsibility high above others where they are to direct and control the entire IRD process (Pitts & Browne, 2004). Systems Analyst and Designers of the system are essentially at the forefront of the requirements process and set the precedent for who they are creating the system to help. Stopping rules also come into play concerning IRD, relaying the decision of when to stop collecting and begin constructing as an important intelligence and critical factor. There are four main cognitive stopping rules that affect the requirements of a system including: magnitude threshold, difference threshold, mental list, and representational stability (Pitts & Browne, 2004). Magnitude threshold is described as assuming that the Analyst's belief of the sufficiency of information must reach some predetermined threshold (Pitts. & Browne, 2004). Difference threshold is described when Analyst assess the marginal value of the latest piece of information against predetermined threshold (Pitts & Browne, 2004). Mental list is described as involving the use of Analyst's belief structures for construction of mental lists. Representational stability takes place when the mental model of an Analyst stops acquiring additional information. The four cognitive rules serve as a viable list for analyzing requirements gathering when referencing usability guidelines and heuristics (Pitts & Browne, 2004).

Requirements gathering are widespread and not just needed for small information system end-users but also for complex systems such as railway systems and power plants. Requirements are needed to be gathered in order for these complex systems to carry out demanding tasks. An interesting study on Unified Human-Computer Interaction (HCI), Requirements Analysts Framework (UHRAF), and a Safety and Usability Model (SUM) serves to analyze HCI requirements and identify requirement issues in HCI. The three also are described to facilitate the development of relevant HCI design guidelines for Complex Socio-Technical Systems (CSTS) (Yip Wai & Chan, 2010). The foundation basis of UHRAF is broken down into two areas: psychological behavior and operators and human performance and operational hazards. One of the three types of human errors in human performance and operational hazards is one many know all too well which is the automation of human tasks (Yip Wai & Chan, 2010). The error can be traced and linked to smaller information systems geared toward helping a single end-user. There are tasks that a Systems Analyst or Designer may assign to be automated thinking in some way that it would make the end-user's life better when in reality the task is better carried out by the end-user themselves. The

UHRAF and SUM can be applied to assessing smaller information systems products by using the framework as guidance in meeting requirements.

Technical Constraints (Design)

The design of a system affects the way end-users are able to use the system and to what technical constraints are enforced that will prohibit certain uses. There is a bridge that links requirements gathering to the design phase of a system. Storyboarding and prototyping allow the designer to illustrate images, pictures, and sometimes functioning physical models to mimic what the actual system will do, tasks the system will carry out, and the interaction between the system and the end-user. The canal from the requirements-gathering to design can be very large. Therefore, System Analyst and Designers must consider those ideas that are consistent, valid, and agreeable (Smith-Atakan, 2006). Within this design process technical constraints will emerge for both, the Systems Analyst or Designer and the end-user.

Gaining the right combination of human-machine operatives that collectively work together in creating an efficient system can be difficult for small and large information systems. A study on the complexity possible to be faced in developing cooperative human-machine systems in the transportation domain is a relevant example. The investigation searches the designs of such machines to provide and develop affordable Methods, Techniques, and Tools (MTT) (Lüdtke, et. al. 2012). These tools hoped for possibility to address specified information, develop and evaluate cooperative systems from multiple perspectives placing the human and machine agents in charge of common tasks (Lüdtke, et. al. 2012). A perfect blend of the two, human and machine agents is what makes a system great. If there was a MTT in place for information systems products, the likelihood of creating a usable and useful system could be higher. The MTT could have a different effect on how the Systems Analyst and Designers created an efficient system. The MTT engaged intended users and subject matter experts in three activities: *profiling* of the intended users, *visualizing* and cross-checking information flows, and *identifying* inconsistencies within a cooperative system specification (Lüdtke, et. al. 2012). All of these activities requirements and concepts of designs prove beneficial in a successful system.

The social-aspect of the internet has become a phenomenon. Systems Analyst and Designers can definitely benefit by incorporating this social-aspect in the design of information systems products. This can be fathomed by conceiving the objective of a study to apply a social relationship perspective to the design of interfaces for product recommendation agents (PRAs). By taking this same objective and applying it to the research at-hand, successful insight of UCSD systems, is possible. The overall concept of the social relationship aspect research is taking the social relationships provided within a face-to-face retail store and applying said relationships with online shoppers and enhancing their overall shopping experience through the use of PRAs and guidelines of design (Qiu & Benbasat, 2009). The same concept of social relationships can and has been applied to information system products in the form of business simulations for entrepreneurs. The design and interface can always improve to become more and more realistic and engage the end-user as a real CEO.

There are many computer-assisted applications that exist to help small and medium sized enterprises (SMEs) survive and consistently compete with larger corporations. Computer Aided Design (CAD), Computer Aided Process Planning (CAPP), and Computer Aided Manufacturing (CAM) are three such applications (Dean et. al, 2009). The framework of the system relays the possibility for trending technologies to increase customization and reduce production cost. An information system was garnered from the research-successful for the goal, mission, and production in which was sought to fulfill (Dean, et. al, 2009). A template or resource in the form of an information system product allows end-users to create their own, one-of-a-kind, system to further an entrepreneurial venture.

Technology is an ever-changing tool that is shaping how the world conducts business and operates. The same technology is shaping how the design of systems and their interfaces affect, and are used by end-users. A research on usability and interaction design as well as how it is shaped around Scandinavian tradition helps relay the statement (Bødker & Sundblad, 2008). Most Systems Analysts and Designers only include end-users in the design of the system at certain phases, usually the requirements phase. However, Scandinavian tradition through studies conducted in the areas of participatory project design, cooperative design, or user participation within systems development has allowed the tradition to develop relevant strategies and techniques for staff and employees possible for to be an influential stage of design (Bødker & Sundblad, 2008). The Scandinavian tradition puts emphasis on involving the end-user as early as possible in the design system. The tradition has spread since, due to the undeniable logic of the concentration. A strong goal that emerged was the act of giving the end-user a voice early in the design and development of computer support in work places. The idea made it possible to enhance the quality of the end-system (Bødker & Sundblad, 2008). If the intended end-users are constantly involved in the design of information systems products, the end-user could be that much closer to getting their desired system that completes their desired tasks.

As technology changes, so does the way in which the technology is used and designed. In order for a designer to be successful, one must be creative, practical, end-user friendly and meet the end-user needs. End-user's demands are ever-changing as well; therefore, the design of a system or product may be required to change if it is to survive. Astounding ideas emerged from a relevant study in which to design computers and their interfaces. The research introduced Flexing Plastic Computers, Paper Computers, and Organic Computers (Holman & Vertegaal, 2008). These devices utilize an organic architecture, an interface, and an operating design for computers. The designs are able to be folded, retain a flexible hardware, and break the boundary limits that the standard desktops, laptops, and smartphones do not (Holman & Vertegaal, 2008). The insight is that the technology, design, and ambition of these types of computers can be captured in an information system product and serve to help an end-user in interfacing with a more innovative design.

Data and Methodology

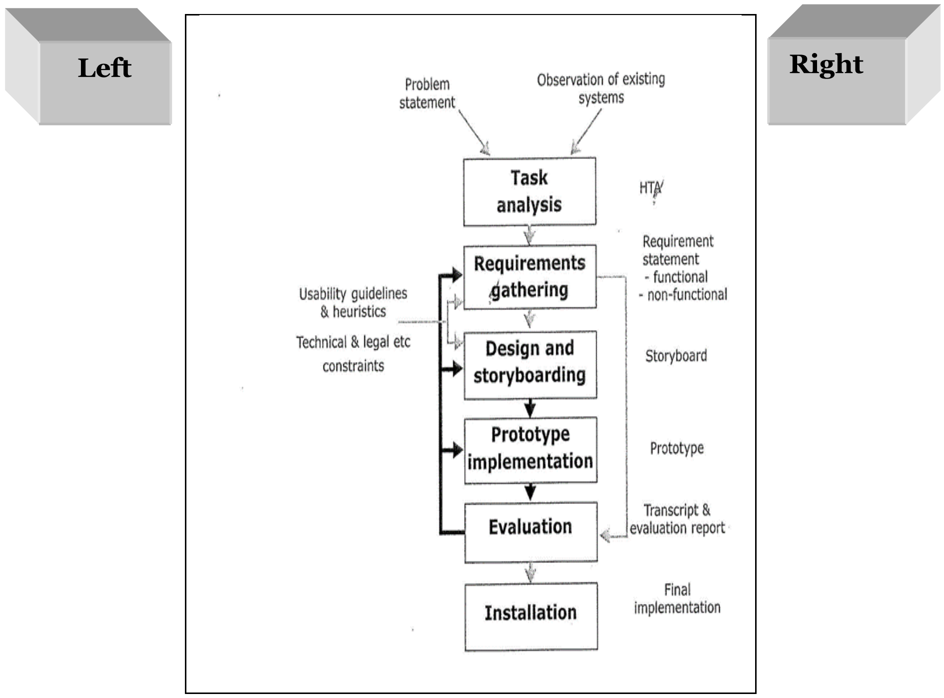
This research study is considered a constructive study. Constructive research is the act of testing theory to render solutions for problems or questions (Ansari, 2013). The research approach is common amongst computer science research. Constructive research approach demands a form of validation that doesn't need to be quite as empirically based as in other types of research like exploratory research. The research is possible to explore evaluation of the subject being developed at an analytical rate against a predefined criteria or conducting performance benchmark tests with the prototype.

The goal of the study was to evaluate existing products against the User-Centered Systems Development (UCSD) model in an effort to understand whether three components of the model were effectively integrated in the product design, including Hierarchical Task Analysis, Requirement Gathering, and Design. This study serves as a pilot project and does not represent an evaluation of all products that exist in the market. As a result, eight (8) products were randomly selected from the World Wide Web (WWW) and used in this pilot study. Various searches were performed using Google, Bing, Yahoo, Ask, and About – top internet search engines. The eight (8) products that were selected appeared in each search result. As a result, the researcher considered these products to be highly visible in the industry and possibly the more widely used products. Product selection did not take into consideration the manufacturer of the product. As such, the purpose of the study is not to market or to disclaim and any product or manufacturer. The sole purpose of the study was to investigate whether existing products met standards set forth by the UCSD methodology according to Smith-Atakan (2006). The products are shown in the Table 1.0.

Once the products were selected, the *End-User IT Product Survey* was developed. The *End-User IT Product Survey* comprises of eight sections, including: Product information, overall quality, end-user computing, hierarchical task analysis (task analysis), guidelines and heuristics (requirements gathering), technical constraints (design), help desk support, and general comments. The questions used a Likert Scale ranging from 1 = Strongly Disagree to 4 = Strongly Agree. The products were evaluated using this survey. Each product survey took approximately 30-60 minutes to complete. The use of important measurements in the survey was derived from the literature review and from important concepts and context in the UCSD Model. The UCSD Model was developed by the University of California at San Diego (UCSD) and comprise of four features:

- A central focus on the people who will use the systems, on their preferences and requirement.
- Building simple models of the users, the tasks, and the technological systems.
- An iterative process.
- Prototyping and the evaluation of alternatives by users (Smith-Atakan, 2006).

The UCSD model is shown in Model 1.0 and depicts six steps that are iterative. Iteration is an important element of system development. Iteration allows the developer to ensure that when a product is developed it undergoes a repetitive process of gathering end-user needs so that the ultimate product is usable, useful and accessible to the intended audience. Of the six steps in the UCSD model, only three were used in the study. The reason why the first three elements were chosen is because these elements are germane to understanding how end-users interact with the product in the initial stages of development while the remaining three elements tend to focus more on the product once delivered.



Model 1.0: The User-Centered Approach

When reviewing the UCSD Model, the subtopics shown on the left are considered the *inputs*, the elements in the center are considered the *process*, and the subtopics shown on the right are considered the *outputs*. The input-process-output, or IPO, defines a system. In other words, the UCSD model is in essence a system that operates with interconnecting components that supports the life cycle of information systems. For example, the *input* for a Task Analysis is a Problem Statement and the *output* from the Task Analysis is an HTA.

The survey was used to better understand how the Hierarchical Task Analysis (HTA) was developed, what requirements gathering strategies may have been used, and identify any design or technical constraints that might exist. Finally, recommendations were made as to how each product would be improved for end-user use.

Results and Conclusions

The purpose of the study was to assess existing Information Systems products. Eight products were selected and evaluated. The products included: GoVenture, Glo-Bus, Entrepreneur, DIY Toolkit, Grow-Think, Industry Masters, CapSim, and BizCafe. One product, Grow-Think, was eliminated from the assessment process because it was necessary that the product be purchased in order to be assessed.

First, a summary of the capabilities and attributes of each product was defined by the researcher. By gathering information about what the intended purpose of each product and use was, doing so provided a holistic overview of what each product was intended to perform. Table 1.0 provides the overview:

Table 1.0: Product Overview

Product	Description of Product Overview
BizCafe www.interpretive.com	Management: Whom should I hire? What should I pay them? Marketing: What price should I charge? How do people learn about my business? Operations: How much should I purchase? What equipment do I need? Accounting: How do I keep track of money? What is an income statement and balance sheet?
CapSim www.capsim.com	Foundation: R&D, Marketing, Production, HR and Finance. Capstone: R&D, Production, Marketing and Finance

DIY Toolkit www.theinnographer.com,	Idea Creation; Innovation
Entrepreneur www.interpretive.com	Management Issues; Operations; Marketing; Finance
Glo-Bus www.glo-bus.com	R&D; Operations; Marketing; Corporate social responsibility and Citizenship; Financing
GoVenture www.goventure.net	Startup; Product Management; Facilities; Human Resources; Operations; Accounting/Finance; Financial Literacy; Career/Life Skills
Grow-Think www.growthink.com	N/A
Industry Masters www.industrymasters.com	Supply Chain Management; Strategy; Market Segmentation; New Product Introduction; Operations management; Product Lifecycle; Portfolio Management; Competitive Advantages; Inventory Management; Capacity Planning; Finance; Issue/Buyback Shares; Mergers and Acquisitions; Company Valuation

Second, the aforementioned products were assessed in the areas of – HTA, Requirements Gathering, and Design in an attempt to discover whether UCSD attributes existed in each design. Of the eight products, four of them required instructor access (BizCafe, Entrepreneur, Glo-Bus, and CapSim) and the remaining were accessible without the need of instructor intervention. The summary of the findings after each product assessment is compiled in the table below:

Table 2.0: Product Assessment

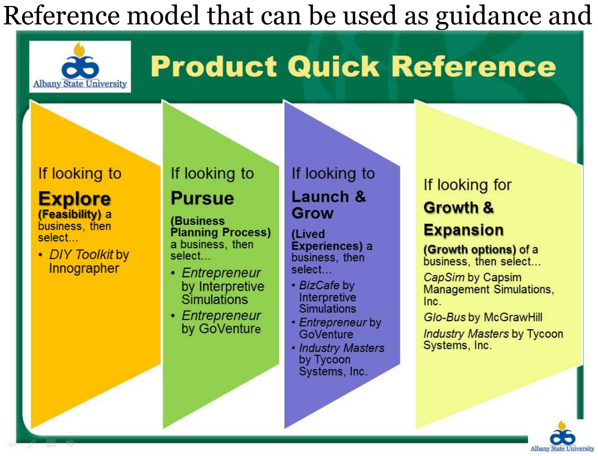
Product	Product Assessment Summary
BizCafe	Product makes decisions for end-user, criteria-based design, only one option for business, poor navigation, rules and guidelines are offered both on interface and pdf format, lengthy cases, time consuming, some options unsuitable, covers topics: finance, inventory management, sales, marketing, advertising, staffing, promotion, recommended for college-level professors/students in courses: business, financial accounting, management, able to be used as teaching aid.
CapSim $53.99	Product offers three IS products: *Foundation, Capstone, CompXM*. Foundation was assessed; allows end-user to grow a $40 million business, starts with 1 product, end-user able to develop a portfolio of up to five (criteria), incorporates simulation rounds, simulates the management decision process in a true-to-life competitive environment, reiterates competition, individual or team-based, covers topics: research and development, marketing, production, finance, human resources, total quality management, recommended for corporate and college/university environment, able to simulate up to 2 days – full semester.
DIY Toolkit Free	Product does not offer a way to start business, product helps end-user develop entrepreneurial ideas, offers advice on ideas, offers lectures, teaches, tasks are not interdependent, intended audience varies, wide range of end-users, creativity is encouraged, highly interactive, used in Google drive, recommended for all entrepreneurs all ages.
Entrepreneur	Provides thorough instructions available on interface and pdf format, must read case to start, only one business option, tasks are interdependent, easy navigation, help button placed at the bottom of each interface, offers glossary for terminology, system geared toward professor and student interaction, can be used as a teaching aid, covers topics: finance, inventory management, hours, pricing return policy, marketing, staffing, recommended for college-level professors and students in courses: business, management, finance, accounting, operations.
Glo-Bus $42.00	Online business simulation, student required to pay $42 - must register, students compete with each other, students able to message throughout system with other students, decision-making, only 1 business option - pre-existing 5 year old company, incorporates simulation rounds, iteration, has large amounts of data, offers help in all 3 support fields, covers topics: finance (earnings per share, return on equity, cash flow, credit rating, image rating, net revenues, net income, stock) business policy (competitive strengths/weaknesses, allows end-user to view competitor), product design, marketing-international, entry-level assembly, multi-featured assembly, compensation, labor, corporate citizenship
GoVenture Price varies: Instructor License - $499 Student Seat license - $249 Option range - $399 - $2,999	Offers categories of *Educational Games and Simulations*, *Money Finance and Investing*, *Design Your Own Simulations* and *Miscellaneous* all of which offer various amounts of gaming, software, and simulation IS products. *Entrepreneur* in the *Educational Games and Simulations* category was assessed; gives option of starting a new business or pre-existing business with multiple business-options (option), end-user able to run simulation for as long as desired, no time-constraints, gives many business options for various decision-making, maximum end-user control, incorporates real life events i.e. (stress level, injury), incorporates life-like features i.e. (family, personal life, personal cash, health and rest), software allows end-user to interact through actual calling of suppliers, employees, employee references, covers topics: business plan, type of business, seed money, business name, logo, incorporation legal structure, location, site, equipment, permits/licenses, financial, allows monitoring of: customer traffic, sales, cash flow, customer satisfaction, inventory, employee morale, product prices, hiring employees with real resume features, hours of operation, scheduling, advertising, bill payments, payroll, financing, growth, includes lesson plans for teachers, includes virtual lawyer, accountant, advisor for entrepreneur (end-user), includes *Experiencing Entrepreneurship* – a resource guide to

	entrepreneurship, includes user guide, includes *Performance Evaluation Report*, recommended for advanced youth, high-school students, college/university students, adult.
Grow-Think	Eliminated due to the requirement to purchase in order to assess.
Industry Master Free	Easy authentication/registration, includes various options for businesses, easy navigation, incorporates innovative automated technology, user-guide/rules only in pdf format; rules should be visible for end-user on interface, only given 5 minutes to make decisions before prompting next task, tasks interdependent, offers a real-world business simulation, covers topics: supply chain management, entrepreneurial start-up, strategy, product lifecycle, portfolio management, inventory management, introduces strategic positioning and financial planning, recommended uses for college courses in; business, finance, supply chain, management, adults.

Finally, a Quick Reference table was developed to assist end-users in the selection of IS products that make the decision to launch and/or grow an entrepreneurial venture a less challenging task. Babson College developed a model that depicts four pillars of entrepreneurship curriculum, including: explore, pursue, launch & grow, and growth & expansion (Babson College, 2011).

Model 2.0: Babson College Model (Babson College, 2011)

Utilizing the Babson Model above, the researcher was able to categorize the findings from the assessment of each IS product into a table that would classify the stages described and assist end-users in deciding upon an IS product to use for entrepreneurship. Through an analytical process, the eight IS products were grouped by product capabilities, product assessments, and noted features. Below is a Quick Reference model that can be used as guidance and assistance.



Model 3.0 Product Quick Reference devised by this Research Study

In summary, important differentiations found in each product addressed single vs. multiple business options, end-user decision making, task interdependence, and criteria-based constraints. One discovery was that some simulations or demos were not as robust in providing 'real' or 'actual' examples in order to build consumer confidence among those wanting to invest in the product.

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