Corporate Implementation of Design Thinking for Innovation and Economic Growth

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In the 21st century, many companies seek the uniqueness of product development and subsequent growth that Apple and others embody. This quantitative survey research critically examines the facets of the change process associated with top Fortune 2000 corporate executives' implementation of Design Thinking in their companies. This research is significant to understand how DT shapes and changes corporate culture, understand how executives implement DT in their corporations, providing executives with greater understanding of DT, and raising awareness of DT. This study further extends knowledge of corporate Design Thinking implementation for innovation and growth.

INTRODUCTION

As the global economy recovers from the Great Recession, struggling companies seek to have the uniqueness of product development and subsequent growth that Apple, HP, Google and others embody. The legendary successes of these *Design Driven* companies demonstrate that their products can replace the outdated products, expand existing markets, and create new opportunities for growth. This has caused many disruptions in companies which are often thwarted in their pursuit of success in the global market. The *golden egg* of innovation is a prize most valued by the corporate community.

PROBLEM

Since the bulk of corporate culture is dictated hierarchically the target groups of this study are the executives and managers of the Fortune 2000 companies from the last two years. This research examines the corporate adoption of Design Thinking (DT) as an influence in changing the prevailing rigid corporate culture. A corporate DT implementation decision may lead to the creation of new innovative products, and company profits. Does a relationship exist between the actual executive implementation of DT (as a remedy to failing products and profits) and corporate innovation and growth? How can corporate culture be changed? How can change be sustained promoting new innovations and positive growth? These questions were addressed in this quantitative survey study through the main research question:

> *What factors of DT do corporate executives and managers perceive as successful to transform their companies' corporate culture, promote new innovations and positive growth?*

LITERATURE REVIEW

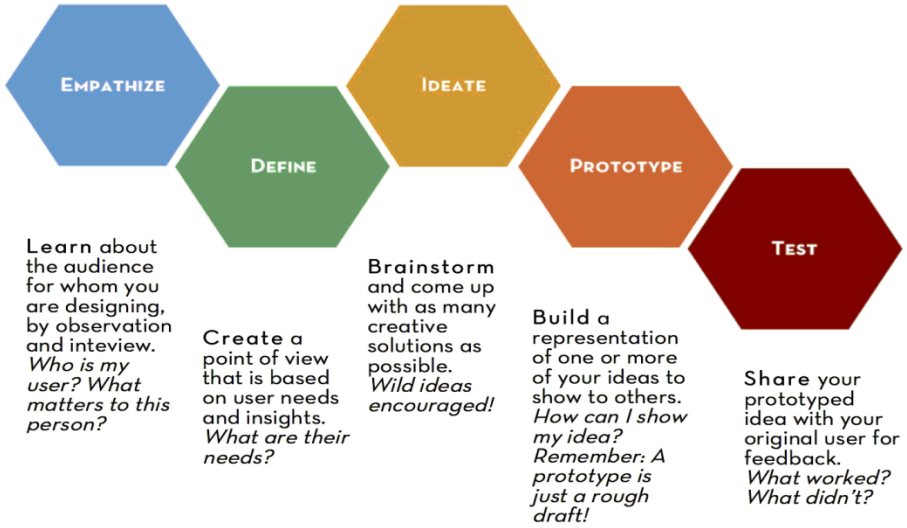
Best Practices for Business Innovation

There is a plethora of literature (Kelley, 2009; Martin, 2009; Cross, 2011; Issacson 2011; Verganti, 2009) in the business world about the merits of Design Thinking (DT) for companies seeking an infusion of innovative product development. Design Thinking emerged as a design industry approach to problem solving and innovation in the 20th century and was largely used by designers and inventors. Design Thinking has since evolved over that last decade as an essential *best practice* for businesses to solve problems and create new products while also radically altering corporate culture. And yet with all the tools in the business field to access for sustained positive change, very few established companies innovate successfully (Christiansen & Overdorf, 2000). Renowned universities from Harvard to Stanford Business Schools have given Design Thinking great prominence, along with the founding of the nation's first Design Boot camps for corporate executives. Noted innovative companies such as *frog, inc.* and IDEO have established the Austin School of Design and Stanford University's Design School, to train the next generation of corporate America and beyond. Upon examination of the literature on corporate change (Lucente, Meyer, Mrazek and Sato, 2010; Kotter, 1998, 1999, 2007, 2009: Denison 1996; Deshpandé and Webster 1989; Detert, Schroeder, and Mauriel 2000; Hatch 1993; Martin 2002; Schein 1999; Schultz and Hatch 1996), there exist few studies which seek to survey corporate executives' experience in implementing Design Thinking principles and culture. This study seeks to examine how executives and managers embrace and promote Design thinking approaches within their corporate departments and throughout their companies.

Design Thinking

Design Thinking evolved over that last decade as an essential *best practice* for businesses to solve problems and create new products while also altering corporate culture. DT for this study is defined as Design Thinking which applies a continuous evolving process through the stages: *Empathize, Define, Ideate, Prototype and Test* (Figure 1).

FIGURE 1
FROM d SCHOOL BOOT CAMP TRAINING MANUAL. THE HASSO PLATTNER INSTITUTE OF DESIGN AT STANFORD UNIVERSITY (2015)



Within each stage, problems are framed; questions emerge, along with more ideas, until the best answers are evident and chosen. The steps can be simultaneous or linear and they are repeatable. Many of design thinking business trainings during the last decade can be traced to DT guru David Kelley and his brother Tom Kelley of IDEO. David Kelley launched Stanford's *d School*, and trail blazed Design Thinking boots camps around the globe. DT boot camps emphasize business leader and team application of DT principles while also harnessing their creativity. The Kelley brothers (2013) advocate that all can cultivate their creative side in their book, *Creative Confidence*. Much of the prevailing literature indicates that DT has gained popularity in the last five years. Is DT a passing fad or an enduring business model to be taught and incorporated by companies seeking profitable innovative ventures in the global marketplace?

The Role of Corporate Culture

Since most of corporate culture is dictated hierarchically, the target groups of this study are the executives and managers of the Fortune 2000 companies from the last two years. This research studies the corporate adoption of DT as an influence in changing the prevailing rigid corporate culture. A corporate DT implementation decision may lead to the creation of new innovative products, and company profits. Does a relationship exist between the actual executive implementation of DT (as a remedy to failing products and profits) and corporate innovation and growth?

In the Kotter & Heskett (1992) seminal study, highlighting results of a an eleven year examination of 207 large North American companies in 22 various industries, company culture management was a large factor in profit margins. Companies that valued well managed corporate culture experienced a 682% increase in revenue versus 166% in the companies that lacked a corporate culture management strategy. These numbers translated into net income of 756% over a mere 1%. Stock prices for the companies valuing well managed corporate culture shot to 901% versus 74%. This study is a classic in business school curriculums because it documents the extraordinary influence of company culture on profits and corporate growth. In an era of constant change, Kotter & Heskett's (1992) research results hammered the truth to corporate America and beyond; company culture cannot be ignored. Rather companies needed to demonstrate appreciation for employees, customers and owners, while also building leadership skills of all in order to face the challenges of inevitable change. In a noted follow up study, Heskett (2012), in his latest book The Culture Cycle asserts that corporations lacking strong company culture underperform by 20-30% when their bottom line is compared with companies possessing well managed cultures. Corporate culture and its effective management, numerous studies confirm remain the launch pad of innovation, (Lucente, Meyer, Mrazek and Sato, 2010; Denison 1996; Deshpandé and Webster 1989; Detert, Schroeder, and Mauriel 2000; Hatch 1993; Martin 2002; Schein 1999; Schultz and Hatch 1996).

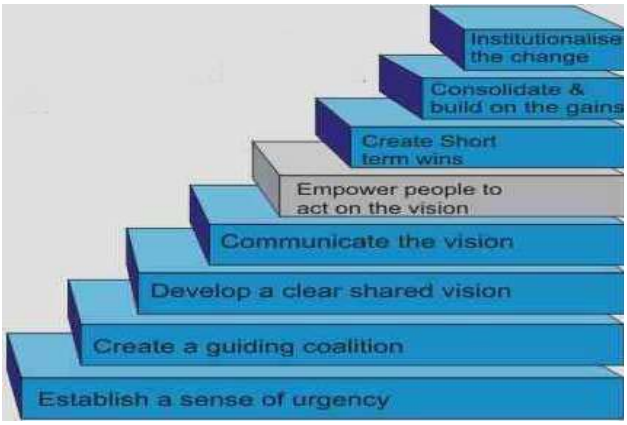
Conceptual Framework: Kotter and his Change Model

This study examined how executives and managers embrace and promote Design thinking approaches within their corporate departments and throughout their companies. Kotter's Change model was utilized to create and analyze the survey questions, in order to document change process introduced with use of DT principles in the companies surveyed. The survey was written using questions written to reflect Kotter's Change Model (2007, 2009). Kotter (1996), a Harvard Business School professor, and his work have impacted the business and educational communities and many other organizations for nearly 2 decades. Kotter is renowned in these circles through his studies and writings about leadership and change. In *A Force for Change*, Kotter made the case for distinguishing between managers who manage even when it is not adequate for an organization and leaders who, though rare, are much needed for change to happen. He asserted that noteworthy changes will never happen if corporations and organizations continue to put managers into leadership positions. Kotter argued that "management skills do not lead to change" (pp. 7-8). Since the release of his book, the terms *manager* and *leader* are no longer synonymous.

The focus of many progressive corporations and organizations is systems change.
Researchers in health care reform, higher education, and many other fields have found Kotter's (1996) model useful for mapping out their organizational change strategies (Eiken, 2004). His writings aided in

shaping and defining effective leadership impacting the education and business arenas. In his works, *Leading Change* (1996); *Winning at Change* (1998); *The Heart of Change* (2002), written with Cohen; and *Our Iceberg is Melting* (2006), written with Rathgeber and Mueller, Kotter outlined his noted Eight–Step change model (Figure 2). This model promoted a strategic, planned, and linear approach to problem solving, which many in business, education, and other organizations have affirmed as effective. Other models for planned change exist, which include specific steps to follow (Rowley, Lujan, & Dolence, 1997; Trahant, Burke, & Koonce, 1997). However, Kotter's (1996) change model stands out because it does not begin Step 1 with developing a vision. The vision stage follows after the leaders have created a sense of urgency for change and built a coalition that will drive the change.

FIGURE 2
KOTTER'S (1996) 8 STEPS TO SUCCESSFUL CHANGE ARE DEPICTED AS STEPS TOWARDS SUCCESSFUL CHANGE



RESEARCH QUESTIONS/HYPOTHESES

The survey was written to gain insight into upper corporate executives' and managers' implementation of Design Thinking and the extent to which they support DT implementation in their immediate departments and other departments throughout their companies. For this study, the overarching research question was: What factors of DT do corporate executives and managers perceive as successful to transform their companies' corporate culture, promote new innovations and positive growth?
The research questions that guided this research were:

> *R1: How important to corporate executives and managers is Design Thinking training to initiate corporate change? (Kotter steps 1-3)*
> *R2: What DT principles are perceived to be important to corporate executives and managers to promote change in their companies' culture? (Kotter steps 4-6)*
> *R3: What DT principles are perceived to be important to corporate executives and managers to promote new innovations in their companies? (Kotter steps 7-8)*
> *R4: What DT principles are perceived to be important to corporate executives and managers to promote growth in their companies? (Kotter steps 7-8)*

The research questions were investigated by collecting quantitative data to test the following:

H1: Corporate executives and managers surveyed will rate Design Thinking principles more than somewhat important in initiating change processes in their companies' corporate culture.
H2: Corporate executives and managers surveyed will rate Design Thinking training more than somewhat important in initiating corporate culture change.
H3: Corporate executives and managers surveyed will rate Design Thinking principles more than somewhat important in promoting new innovations in their companies.
H4: Corporate executives and managers surveyed will rate Design Thinking principles more than somewhat important in promoting promote growth in their companies.

METHODOLOGY

Participants and Instrument

The survey was distributed online to participating corporate executives and managers. A sample size of more than 72 participated in the survey from a population of 253 LinkedIn Fortune 500 members. The risks to subjects were minimized using procedures that allowed voluntary participation, anonymity, and choice in self-disclosure consistent with sound survey design. The selection of subjects was equitable. They were given the opportunity to participate and those who choose to do so were informed of the scope and purpose of the research. They were informed of the voluntary nature of their participation. An internet company was used to host the survey providing a link that was included in the survey to potential participants. The internet company provided the data in SPSS spreadsheet for quantitative analysis. Raw data was reviewed by the researcher for data analysis purposes. The survey company provided email addresses and names of those participants who wanted study results. No raw data was transferred to participants, only final analysis and results.

All survey questions for the study were based on Kotter's Model of Change (Kotter, 1996). Kotter's 8 step Change model is evident in the construction of the DT questions. It was used as the basis for analysis of the quantitative survey (see Tables 2 and 3). Subject matter experts became the validation team for the quantitative survey, ensuring that each aspect of DT was adequately covered within the survey and that the survey was understandable and met the criteria for sound survey development.

Process

Quantitative analysis using SPPS software was used to affirm the validation data. The survey was developed to measure executive/manager perceptions of DT principles in implementing change for innovation Each Kotter Change step was represented in a minimum of 11 Likert-type scaled questions included within the survey. Answers ranged from 1-5, with 5 being the highest indicator of agreement or satisfaction or importance.

RESULTS

Quantitative Analysis Summary

The concept behind the survey was to gain insight into upper corporate executives' and managers' implementation and support of Design Thinking (DT) principles. Data for the present study were collected from 73 corporate executives and managers at Fortune 500 companies. Participants were recruited via LinkedIn and related social media executive sites. Participants provided consent for participation and completed the Perceptions of Design Thinking Survey online. The survey consisted of demographic information and 24 items designed to reflect Kotter's 8 Step Change Model (2007, 2009). The demographic information and subsequent quantitative analyses are presented based on 73 participants who provided responses to the items designed to reflect Kotter's change model and DT principles.

Demographic information is presented in Table 1 (See Appendix). A majority of participants listed their company position as either Director (33.3%) or Manager (33.3%), and their position function as Executive (41.8%). Participants were employed within a wide range of industries providing a wide range

of services. A majority of companies are private (68.2%) and employ less than 500 employees (60.3%). In regard to geographic location, 41.2% participants work at companies based in North America, 22.1% in Europe, 17.6% in Pacific Asia, 7.4% in Brazil, 4.4% in South and Central America, 4.4% in Africa, and 2.9% in the Middle East.

The 24 items on the Perceptions of Design Thinking Survey were organized into three categories corresponding to Kotter's 8-step model: Steps 1-3 (6 items), Steps 4-6 (7 items), and Steps 7-8 (11 items). Within each category, some of the items are scored on a Likert scale from *Strongly disagree* to *Strongly agree.* Ratings of these items were averaged for each category to produce three scales corresponding to the steps of the change model (see Table 2). The Steps 1-3 scale has 2 items, the Steps 4-6 scale has 6 items, and the Steps 7-8 scale has 9 items. Descriptive statistics for the scales are presented in Table 2. All three scales were tested for internal consistency using Cronbach's alpha. Measures of internal consistency are used to determine whether items on a scale are related or fit well together in the measurement of a given latent construct. For example, it is important to ensure the 9 items on the Steps 7-8 scale were internally consistent or work well together as a group in the measurement of steps 7-8. Higher values of Cronbach's alpha mean higher reliability, with the highest possible value being 1. Values above .6 or .7 are generally considered acceptable. Cronbach's alpha values for all three scales were good (see Table 2). Four of the seven remaining items are on the Steps 1-3 scale, one is on the Steps 4-6 scale, and two are on the Steps 7-8 scale. The Steps 1-3 items are summarized in table 3, Steps 4-6 in table 4, and steps 7-8 in table 5. Pie charts and Tables of the frequency of responses for each question are presented in Figures 3-8 the Appendix.

TABLE 2
DESCRIPTIVE STATISTICS FOR KOTTER'S CHANGE MODEL SCALES

	n	*m*	*sd*	alpha	Range
Steps 1-3	73	4.12	1.04	0.73	1.00-5.00
Steps 4-6	73	3.82	0.73	0.71	1.00-5.00
Steps 7-8	73	3.56	0.71	0.80	1.00-5.00

The study aimed to investigate whether corporate executives and managers rate DT principles more than somewhat important in initiating change processes in their companies' corporate culture, initiating corporate culture change, promoting new innovations in their companies, and promoting growth in their companies. Due to non-normally distributed ratings on the survey items and scales, nonparametric one-sample Wilcoxon tests were performed. The null hypothesis for the one sample Wilcoxon test is that median values are not different from a given number. In the study, hypotheses stated that corporate executives and managers would rate DT principles as more than somewhat important. A rating of '3' corresponds to somewhat on the Likert scale for items that make up the three scales for steps 1-8 and was set as the expected value in the Wilcoxon test. The test is then used to examine the data collected in the study to determine whether participants rated DT principles as more than somewhat important (i.e., higher than a '3').Table 3 presents the results from the Wilcoxon tests. The median (middle) value for all three scales was found to significantly differ from the expected value of '3' indicating that participants rated DT principles as more than somewhat important ($p < .001$).

TABLE 3
ONE SAMPLE WILCOXON SIGNED RANK TEST

Scale	Observed Median	*p*	Reject Null?
Steps 1-3 (code yellow)	4.5	< .001	Yes
Steps 4-6 (code green)	4	< .001	Yes
Steps 7-8 (code blue)	3.67	< .001	Yes

Relevance for Corporate Culture

Employee training for the major DT change initiative was received with a concern that there was insufficient time devoted to training and suffered some employee resistance (see figure 6).This concern for more time may indicate that employees were engaged and wanted more time to learn about DT. Resistance to change is also noted as a common reaction in any company change (Kotter, 1998, 1999, 2007, 2009). During the corporate DT change initiatives, the most prominent challenge faced was employee understanding of change. Through the training sessions employee understanding and employee skills and proficiency were improved (see figure 7).

Corporate Culture Change and Innovation

A corporate DT implementation decision may have led to the creation of new innovative products survey results revealed (see figure 8). Perhaps company profits will also follow, but this research did not find evidence of increased company profit margins. The study findings indicate a relationship does exist between the actual executive implementation of DT (as a remedy to failing products) and corporate innovation (see figure 8). The most positive outcome of the DT change initiatives resulted in more innovation in departments and more creation of new inventions. However, there was no direct result of an increase in company profitability (see Figure 8). If a company desires to change its culture to encourage innovation, are profits expected to follow? Hartmut Esslinger (2009), founder of the multinational design firm Frog, Inc., writes about creative business strategy, in his book, A Fine Line. He discusses a formula for changing corporate culture, *"Culture + Process = Profits."* Esslinger asserts, a visionary leader has the courage to focus on growing his company's culture and weather the necessary market shifts that the new corporate culture may endure. Many companies fall into the *profit for profit's sake* category and leave their creative company culture behind. Short term profits may increase with operating efficiency measures, but at the expense of nurturing company creative culture (Esslinger 2009).

Extension of Knowledge, Understanding and Implementation

This study further extended knowledge of corporate executive Design Thinking implementation. It was significant in understanding how executives implement DT in their corporations. DT training took place mainly during training sessions, Department meetings, all employee meetings and external DT Boot Camps. Video conferencing and email were the least utilized training methods (see Figure 1). Most of the DT training takes place in all employee meetings. Most trainings were conducted in Group or one on one sessions led by an instructor. The least used training was through software based tutorials. (See figure 3). Most DT information was shared with nonexecutive and supervisors, executive team/senior mangers and non managerial level employees. A smaller percentage of the CEOs participated in information sharing (see Figure 2). The employee training for the major DT change initiative was received with concerns that there was insufficient time devoted to training and suffered some employee resistance (see figure 4).

The knowledge of corporate executives' was extended in understanding how DT shapes and changes corporate culture. The most prominent challenge overcome during DT change initiative was employee understanding of change. It was improved, and employee skills and proficiency were improved (see figure 5). This study shed light on how executives gain a greater understanding of DT for business innovation

and growth. Survey results indicated the most positive outcome of corporate DT change initiatives resulted in more innovation in departments and more creation of new inventions. However, participant survey answers indicated there was no direct increase in company profitability as a result of the companies' DT initiative (see Figure 6). DT training initiatives raised awareness of DT and its impact on corporate culture, promoting new innovations and growth. The trainings also benefited Corporate CEOs, managers and trainers who participated.

CONCLUSION

The quantitative survey research conducted in this project critically examined the facets of the change process associated with corporate executives' implementation of Design Thinking in their companies for new innovations and growth with some important results. It's worth the effort for companies to initiate DT thinking for the company employees. They can expect improved communication, creativity and collaboration and company culture and innovation as a result. The survey results provided a window to study the change process by capturing perceptions of corporate implementation of DT principles for innovation and growth, and an increased understanding on how executives implement DT in their corporations emerged. In addition, new and ongoing change processes were compared. An understanding of how DT shapes and changes corporate culture was examined. The study findings provide a leadership perspective for positive corporate implementation of DT principles.

Corporate DT training initiatives and their impact on corporate culture are connected to promoting new innovations and possible future growth. The information gathered points the way for possible lasting change in corporate culture with the application of Design Thinking principles through training. This paper noted many studies focusing on changing corporate culture over the last two decades. However, even as the need for change is recognized, the question arises how strategic decisions are made in order to have transformative alterations in corporate management to promote new innovative products and resources. Exemplary companies have a thriving corporate culture which immerses their employees in DT principles and implementation, for enduring positive corporate culture change.

REFERENCES

Brown, T. (2009). *Change by design: How design thinking transforms organizations inspires innovation.* New York, NY: Harper Collins.

Christensen, C. M., & Overdorf, M. (2000, March-April). Meeting the challenge of disruptive change. *Harvard Business Review*. 78, no. 2, pp. 66–76.

Cross, N. (2011). *Design thinking: Understanding how designers think and work.* Bloomsbury Academic Publishing, London.

Berg d school, Stanford University. (2015). *The virtual crash course in design thinking*. Retrieved from http://dschool.stanford.edu/dgift/

Denison, D. R. (1996). What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, *21*(3), 1–36.

Deshpandé, R., & Webster, F. E., Jr. (1989). Organizational culture and marketing: Defining the research agenda. *Journal of Marketing*, *53*(January), 3–15.

Eiken, S. (November 2004). *Promising practice in long-term care systems reform: Common factors of systems change*. Medstat Report for the U.S. Department of Health and Human Services, CMS.

Esslinger, H. (2009). A Fine Line: How Design Strategies Are Shaping the Future of Business. San Francisco, CA: Jossey-Bass.-

Tellis, G. J., Prabhu, J. C., & Chandy, R. K. (2009). Radical innovation across nations: The pre-eminence of corporate culture. *Journal of Marketing 73* (1), pp. 3-23 Chicago, IL.

Grandcolas, U., Rettie, R., & Marusenko, K. (2003). Web survey bias: Sample or mode effect? *Journal of Marketing Management, 19*(5-6), 541-561.

Haskett, J. (2011). *The culture cycle: How to shape the unseen force that transforms performance*. Upper Saddle River, NJ: FT Press.
Hatch, M. (1993). The dynamics of organizational culture. *Academy of Management Review*, *18*(4), 657–697.
Isaacson, W. (2011). *Steve Jobs*. New York, NY: Simon & Schuster.
Kelley, T., & Kelley, D. (2013). *Creative confidence*. New York, NY: Crown Business.
Kotter, J. P. (2009): *Leading change*. Boston, MA: Harvard Business School Press.
Kotter, J. P. (1998, fall).Winning at change. *Leader to Leader*, *10*, 27-33.
Kotter, J. P. (1999).*What leaders really do*. Boston, MA: Harvard Business School Press.
Kotter, J. P. (2007). Leading change: Why transformation efforts fail. *Harvard Business Review*, 92-107.
Kotter, J. P., & Cohen, D. S. (2002). *The heart of change: Real- life stories of how people change their organizations*. Boston, MA: Harvard Business School Press.
Kotter, J. P., & Heskett, J. (1992). *Culture & performance*. Upper Saddle River, FT Press.
Kotter, J. P., Rathgeber, H., & Mueller, P. (2006). *Our iceberg is melting: Changing and succeeding under any conditions*. New York, NY: St. Martin's Press.
Lucente, S., Meyer, S., Mrazek, D., & Sato, S. (2010). Design thinking to make organization change and development more responsive. *Design Management Review, 21*(2), 44–52.
Martin, J. (2002). *Organizational culture: Mapping the terrain*. Thousand Oaks, CA: Sage.
Martin, R. (2009). *The design of business: Why design thinking is the next completive advantage.* Boston, MA: Harvard Business School Press.
Rowley, D., Lujan, H., & Dolence, M. (1997). *Strategic change in colleges and universities: Planning to survive and prosper*. San Francisco, CA: Jossey-Bass.
Schoenberger, J. (2011). *Strategic design: Anchoring of creativity and innovation in business.* Wiesbaden, Germany: Gabler Verlag.
Schroeder, J. R., & Mauriel, J. (2000). A framework for linking culture and improvement initiatives in organizations. *Academy of Management Review*, 25(4), 850–863.
Schein, E. (1999). *The corporate culture survival guide: Sense and nonsense about culture change.* San Francisco, CA: Jossey-Bass.
Schultz, M., & Hatch, M. J. (1996). Living with multiple paradigms: The case of paradigm interplay in organizational culture studies. *Academy of Management Review*, *21*(2), 529–557.
Trahant, B., Burke, W. W., & Koonce, R. (1997). 12 principles of organizational transformation, *Management Review*, *86*, 17-21.
Utterback, J., Bengt-Arne, F., Alvaverd, E., Ekman, S., Sanderson, S., Thether, B., & Verganti, R. (2006). *Design-inspired innovation.* Republic of Singapore: World Scientific.
Verganti, R. (2009). *Design driven innovation.* Boston, MA: Harvard Business School Press.
Ward, A., Runcie, E., & Morris, L. (2009). Embedding innovation: design thinking for small enterprises. *The Journal of Business Strategy, 30*(2/3), 78-84

ACKNOWLEDGEMENTS

The researcher thanks to Dr. Carlos Aquino of University of Phoenix's Center for Diversity in the Workforce Research for his support and encouragement. Also thanks to Dr. Leidke of Darden School of Business and Professor André Ribeiro Coutinho at the Business School, São Paulo and Symnetics for their interest and support of this research project.

APPENDIX A ADDITIONAL STATISTICS RELATED TO STUDY

Table 1. Demographic information. Note. Demographic information was obtained from the 73 participants who responded to all variables of interest		***n***	**%**
Company position			
	C-Suite	12	17.4
	Director	23	33.3
	Manager	23	33.3
	Other	11	15.9
Position Function			
	Executive	28	41.8
	General Management	22	32.8
	Planning	4	6
	Operations	5	7.5
	Other	8	11.9
Industry			
	Retail	1	1.5
	Consumer	8	11.8
	Healthcare	3	4.4
	Finance	4	5.9
	Energy	1	1.5
	Engineered product services	8	11.8
	Other	43	63.2
	Health	5	7.5
	Services nonprofit	4	6
	Manufacturing durable goods	9	13.4
	Manufacturing nondurable goods	4	6
	Government	2	3
	High-tech	7	10.4
	Finance	1	1.5
	Insurance	2	3
	Construction and mining or oil and gas	1	1.5
	Newspaper publishing or broadcasting	1	1.5
	Telecommunications	3	4.5
	Transportation	2	3
	Other	18	26.9
Company status			
	Private	45	68.2
	Public	21	31.8
Number of employees			
	0-499	41	60.3
	500-10,000	12	17.6
	>10,000	15	22.1
Geographic Region			
	North America	28	41.2
	Europe	15	22.1
	Middle East	2	2.9
	Africa	3	4.4
	Asia Pacific	12	17.6
	Brazil only	5	7.4
	South and Central America	3	4.4

FIGURE 3
HOW AND WHERE WAS DT STAFF TRAINING INFORMATION SHARED?

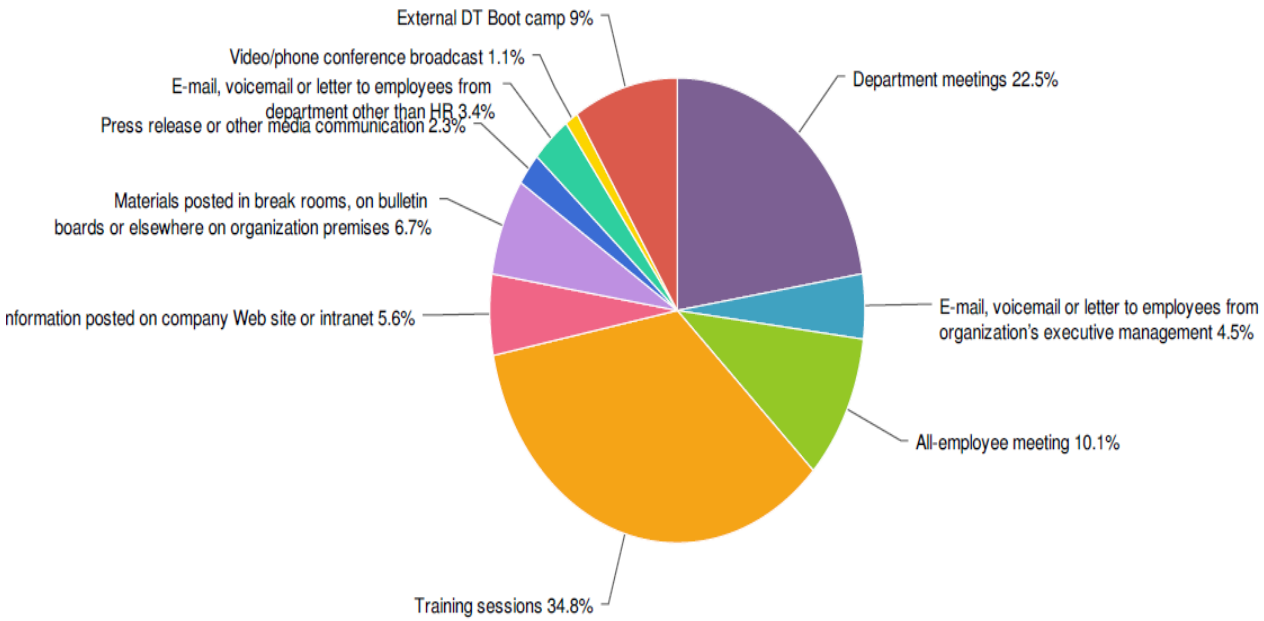


FIGURE 4
WHO PARTICIPATED IN MANDATORY TRAININGS?

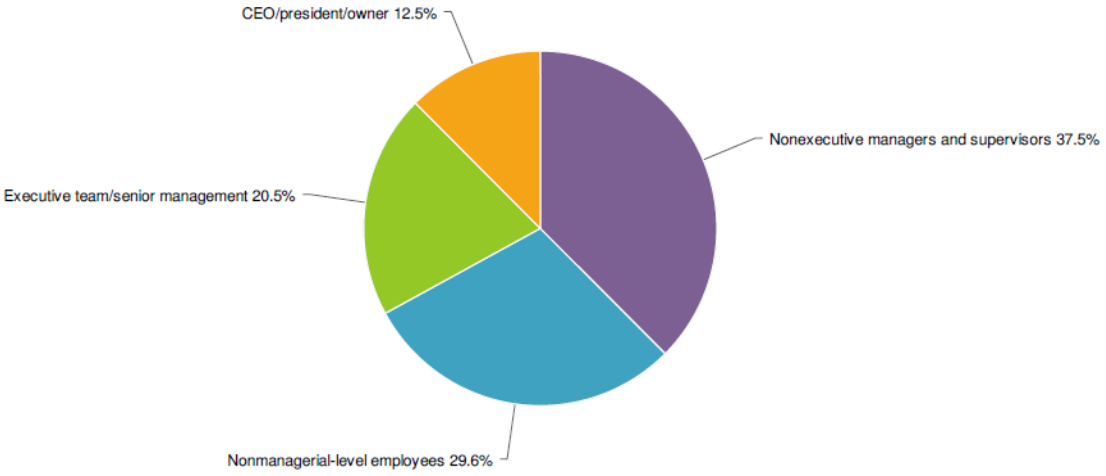


FIGURE 5
HOW AND WHERE WAS DT STAFF TRAINING INFORMATION SHARED?

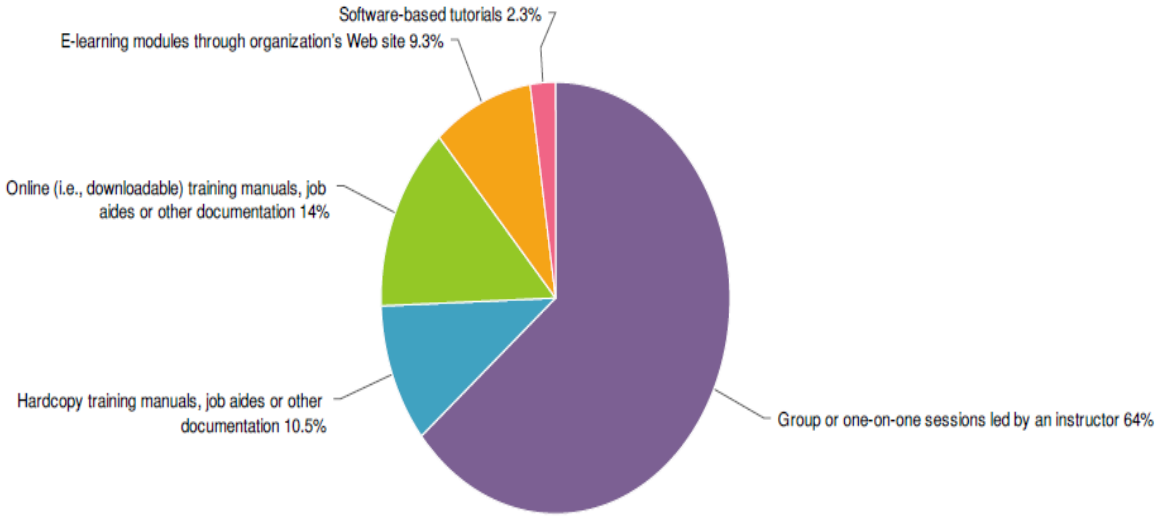


FIGURE 6
WHAT WERE THE MOST PROMINENT CHALLENGES DURING DT CHANGE INITIATIVE?

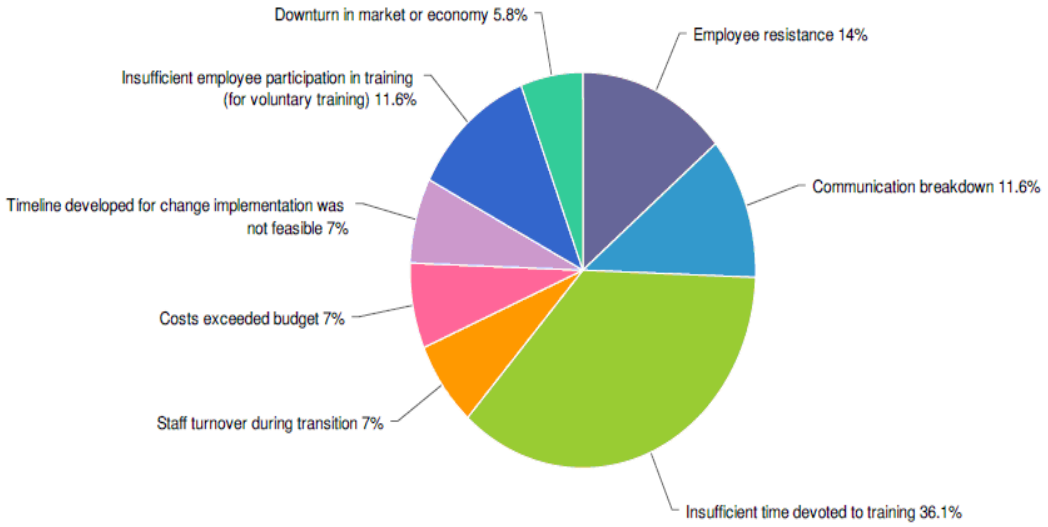


FIGURE 7
WHAT WAS THE MOST POSITIVE OUTCOME OF DT CHANGE INTUITIVE (RESPONSES 1-7)?

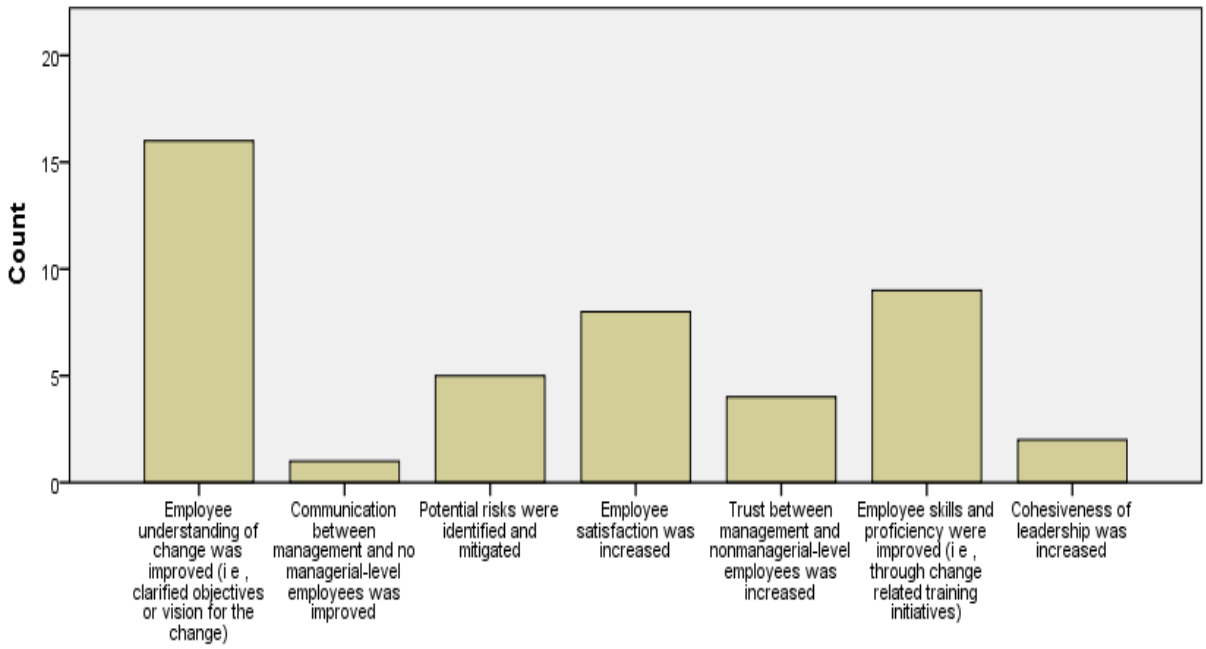
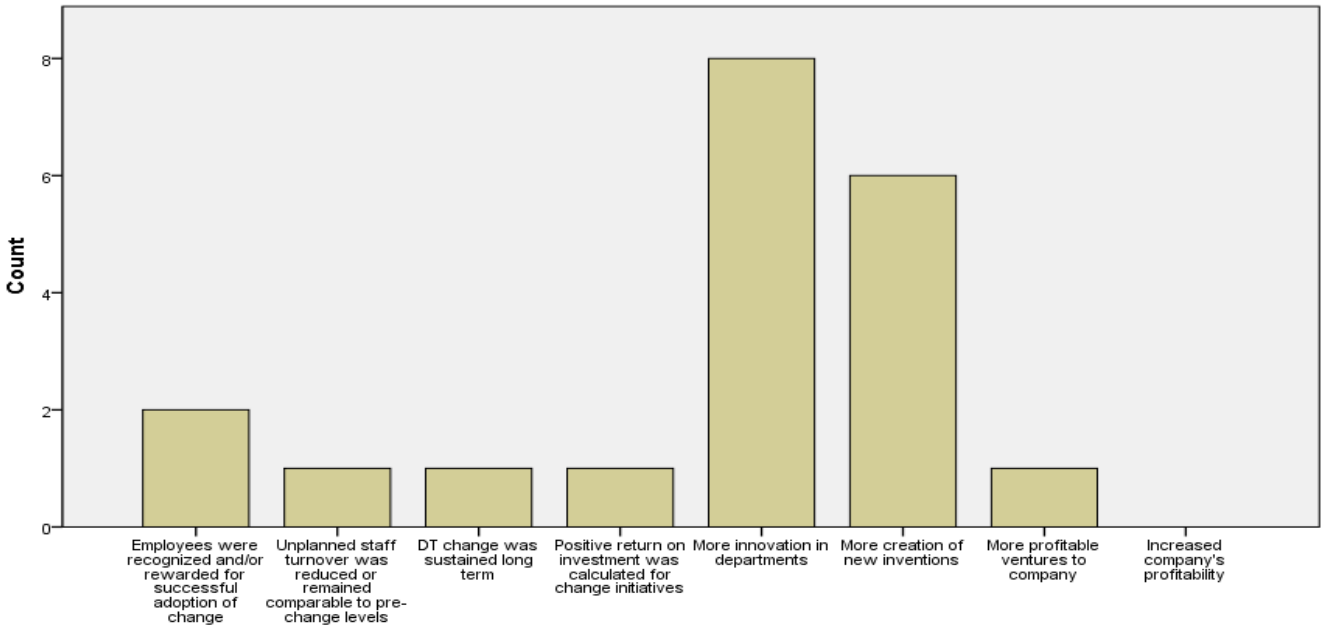


FIGURE 8
WHAT WAS THE MOST POSITIVE OUTCOME OF DT CHANGE INITIATIVE (RESPONSES 8-15)?



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