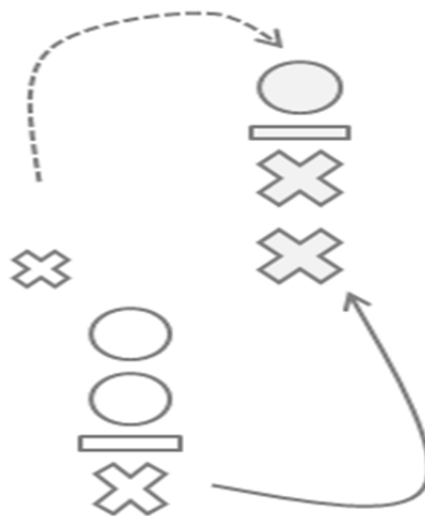


CHALMERS



Identifying business war-gaming application and use in Intellectual Property management

*Master of Science Thesis in the Master Degree Programme,
Business Design*

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ABSTRACT

The purpose of this master thesis is twofold. First, it intends to investigate whether intellectual property functions in different industries are facing the management challenges that could be solved by business war-gaming. Secondly, it intends to find out the practical use of business war-gaming in Intellectual Property function across different industries.

The master thesis aims to respond two research questions:

1. *Whether IP professionals across different industries are facing management challenges that can be solved by business war-gaming?*
2. *How business war-gaming is practically used in IP management across different industries?*

To fulfil the purpose of master thesis and answer both research questions business war-gaming literature review and analysis was done. Based on theory a survey was created to collect qualitative and quantitative empirical data. The survey was carried out with IP professionals across different industries and was focused on responding both research questions. The survey was administered using online surveying software, where 23 good quality responses were received.

Firstly, the results of the survey revealed that business war-gaming can be a helpful tool for IP professionals to tackle their management challenges. Secondly, the survey showed that business war-gaming is practically used in IP management and specifics of the practices were identified.

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Martins Lasmanis

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1. INTRODUCTION

Introduction covers part that aims to present background of thesis followed by purpose and motivation of the study. First section will end with understanding main research question and discussing limitations of this study.

1.1. BACKGROUND

Industry representatives, academics as well as entrepreneurs are claiming that world economies are entering a new phase of wealth generation. It is argued that the economy is changing from an industrial driven to a knowledge driven economy, where intellectual property (IP) and legal constructions are the cornerstones of a welfare system (Petrusson, 2004). United States Patent and Trademark Office (USPTO) show that amount of issued utility patents have increased by almost 80% in last decade compared to period from 1990 – 1999. In addition from 1990 – 1999 period USPTO issued over 1 million utility patents tripling overall historical issuance (Davis & Harrison, 2001). The numbers of issued utility patents points that many companies across different industries have recognized the impact of their intangible assets and understand that they play a crucial role in creating a competitive advantage in a market.

Intellectual property comes as a tool to exclude others from a market and drive sales of a specific product increasing the revenues to a company and driving growth. However, due to complex and fast changing markets competition is inevitable (Day, 2011) and other companies' use all the means necessary to create similar products or services that would not infringe their respective IP protection, but still would deliver similar value for consumer.

To avoid situations where competition can easily invent around or overcome a scope of a specific IP protection plan a particular method needs to be introduced to improve the processes of IP strategy creation. It has been argued that by using business war-gaming it is possible to identify the main risks and challenges that might affect a companies' strategy (Gilad 2009, Chussil 2005). Also business war-games can help to assess core values and main consumer benefits of a new product in a way that cannot be done by typical market or competition analysis (Vanderveer and Heasley 2005). The essence of business war-gaming is captured in the definition below:

Business war-gaming is a roleplaying simulation tool, which allows testing a strategic plan against the possible reaction of competitors.

Although seeing many benefits of this tool, business war-gaming is still considered to be quite new topic in business management (Oriesek and Schwarz 2008). Case studies (Gilad 2009, Horn 2011) have showed benefits of business war-gaming in automotive, consumer electronics as well as food and beverage industries. However, a research on business war-gaming application in IP management to increase quality of decision making has not been assessed in any article or literature to date.

It can be argued that IP managers have limited knowledge, low motivation or trust in using business war-gaming to test their IP strategies since no research have shown applicability and use of the concept in IP management.

1.2. PURPOSE

Based on the described background it is clear that importance of IP increase and it takes more central role when companies assess and make strategic decisions. Moreover business war-gaming has been identified as a promising tool that allows in a simulated environment test a business strategy and case studies have showed successful implementation of the approach in practice. However, no research to date in any industry has been found that assesses business war-gaming applicability and use in IP management. Moreover it can be argued that business war-gaming can be used in IP management to deliver value to decision makers in situations, when new patent application needs to be drafted or IP strategy evaluated for new product launch. Therefore a need can be identified to investigate business war-gaming applicability and use in IP management across different industries.

The purpose of thesis is twofold:

Firstly, it intends to investigate whether intellectual property functions in different industries are facing the management challenges that could be solved by business war-gaming. Secondly, it intends to look at practical use of business war-gaming in IP function across different industries.

Ambition of the thesis is to create a survey and collect information from IP professionals across different industries to fulfil the purpose of this thesis.

1.3. MOTIVES OF THE STUDY

Author considers that this study is of general interest, since not many research and case studies have been written on the practical application of business war-gaming in any industry. In addition no research has been done to analyse business war-gaming applicability and use in IP management.

Business war-gaming finds its foundation in military war-games, where many scientific publications and literature can be found. It could seem that different frameworks and theories can be applied for business war-games as well, however there are very few authors that actually describe and introduce their own business war-gaming frameworks. Authors' assessment on publications shows that just recently this topic has started to be of interest for strategists and managers across different industries to solve general management challenges such as strategy to enter into a new market. This study aims to extend currently available literature in the field and provide a more IP focused research in relation to business war-gaming.

Author believes that the research will present valuable and practical insights to IP managers and practitioners to provide them with knowledge regarding business war-gaming applicability to IP management as well as motivate them to use it in practice to test their strategies.

1.4. PROBLEM ANALYSIS

In order to be able to grasp the purpose of the study author have identified two main research questions:

1. *Whether IP professionals across different industries are facing management challenges that can be solved by business war-gaming?*

This question will allow understanding whether business war-gaming can solve management challenges IP professionals are facing in their work. To be able to answer the research question and solve the problem author will create a survey based on a theoretical business war-gaming framework introduced by Gilad.

2. *How business war-gaming is practically used in IP management across different industries?*

The goal is to gain practical insights and opinions from IP professionals in different industries. Also theoretical framework introduced by Gilad will be used as a basis to create a survey that will respond this research question.

1.5. DELIMITATIONS

As the study addresses a quiet new field in academia as well as in industry, not much research, studies or theoretical frameworks exist on the topic of business war-gaming. However a preliminary search identified several sources that will allow building the theoretical base for this study and deliver credible results.

The time frame for this study is limited to five months, whereas it does not allow author to collect significant amount of data to be able to drive better analysis of gathered results. As well as more data could show different results in relation to overall purpose of this master thesis.

Geographical differentiation in gathered empirical data is not taken into account. It can be argued that practices of IP management are significantly different form one economic to another and could possibly reveal different results.

Considering company confidentiality requirements limitations on the quality of data can be identified, therefore not providing significant insights and limiting the outcomes of this study.

1.6. DISPOSITION OF THESIS

This thesis is divided into six different chapters, which exclude the appendices and references. In order to guide reader through the study a short recap of each chapter will be described further.

The first chapter is *introduction*, in which background of the thesis is described as well as identified the reasons, main research questions and limitations of this study.

Chapter two looks at the *methodology* that was used to execute the process of master thesis. The main points addressed are approach and strategy of the study, process of data collection and analysis. Also a discussion of validity to the research process is covered in this chapter.

Theory of business war-gaming covers the third chapter, which essentially assess the theoretical background of this study, business war-gaming framework introduced by Gilad, which was used as basis for gathering empirical data is covered in this chapter.

Design of the survey is addressed in chapter four where topics such as selecting target audience and describing the types of questions that were used once designing the survey. Aspects of format of survey and management of results topics covered in this chapter.

Chapter five analyses and looks at *the main findings from the survey*. The collected data is analysed in two main sections, i.e. business war-gaming application in IP management and practical used of business war-gaming in IP management.

Chapter six consists of *conclusion of thesis*. Linking together gathered empirical data and posed research questions. Chapter is finalized by addressing the recommendations for future research.

2. METHODOLOGY

This section will cover the idea and process on how the study will be executed, providing a structured roadmap for author to tackle identified research questions and to meet the purpose of the study.

2.1. RESEARCH APPROACH AND STRATEGY

To answer the research question addressed above a common methodology in achieving it has to be set in place. Firstly, based on posed research questions a literature search was initiated. The main sources of information included books and articles, which allowed setting a theoretical base for the thesis and creation of the survey. Once survey was designed a data collection in form of surveying IP professionals was executed, after gathered data was analysed to drive conclusions in relation to the purpose of this thesis. Below Figure 1 shows a systematic approach to thesis execution and provides a good roadmap for author and readers to understand the process of research.

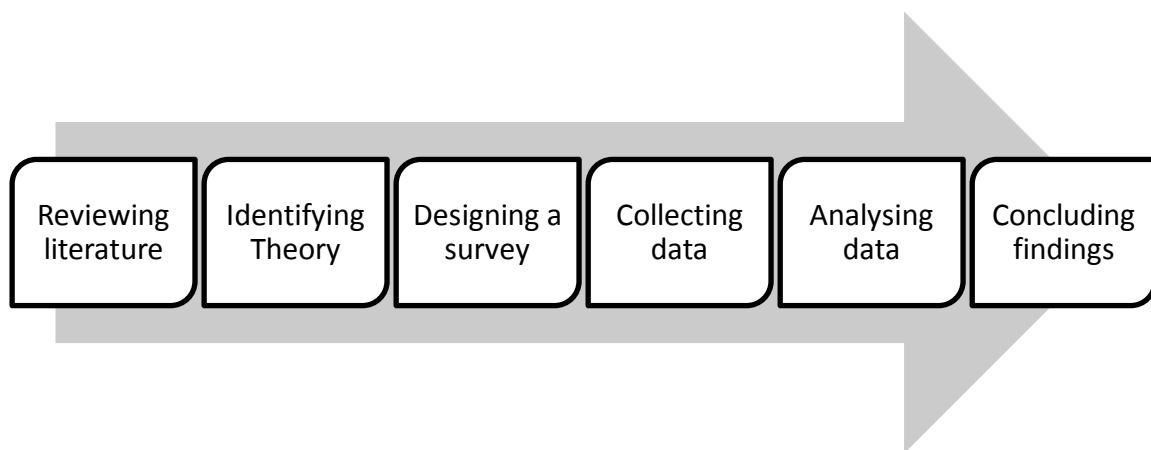


FIGURE 1: ROADMAP OF THESIS EXECUTION PROCESS

Inductive approach was used in this research, since it is based on reasoning in which theory is used to create specific observations that later based on gathered evidences allows driving generalized conclusions (Norman 2001).

As the approach of this research has been identified it is necessary to set a research strategy. Considering environment, time constraints and resources a case study strategy was chosen for this master thesis. Case study, observes characteristics of one individual unit, e.g. university, a person, a group of professionals or a company and provides an in – depth analysis of the subject matter (Cohen and Manion, 1995). It focuses on one specific subject and gives many advantages to small scale research (Blaxter, Hughes and Tight 2006, Biggam 2009).

2.1.1. DATA COLLECTION

In this research both quantitative and qualitative data was collected. Quantitative data allowed identifying changes, trends and gather measurable results. Qualitative data allowed understanding individual perceptions and experiences in relation to the research.

Also according to theory qualitative data provides a more in-depth understanding and explanation of the problem, sharing experience and introducing a broader sense of the subject matter. Quantitative data mainly delivers results that are measurable in one or another way (Biggam 2009).

2.1.2. DATA ANALYSIS

The data used in this thesis comes from one primarily source, i.e. the survey, executed among IP professionals across different industries. This focus group was chosen due to their practical nature in dealing with strategy development and decision making in IP related manners in their daily tasks. To support the collected data secondary sources as articles and books were used.

Both qualitative and quantitative data was analysed. The quantitative data were evaluated by using statistical data analysis software, where cross – tabulation and graphical models were used to convey and interpret the statistical data to present findings to the reader. The qualitative analysis from survey data obtained from IP practitioners was structured around specific themes and similar answers were clustered for the reader and author to be easier to see the findings.

2.2. VALIDITY DISCUSSION

This research can be claimed to be valid due to several reasons.

First, data collected for the study comes from both primary and secondary sources, whereas primary data comes from surveying IP professionals across different industries and secondary data comes from assessment of related theory to research topic in different articles and books. Assessing secondary sources the creditability of such sources was taken into account, i.e. articles with most references were chosen, since that creates relatively higher credibility of addressed research topic.

Second, survey questions were designed in a way to collect both qualitative and quantitative data.

Third, chosen research approach and strategy are commonly used and well tested approaches (Biggam, 2009) for carrying out a research. Also chosen approach for analysing gathered data follows main guidelines set forth by other research papers as well as available literature (Blaxter, Hughes and Tight 2006, Biggam 2009).

Taking into account afore mentioned aspects and methods recognized among other research, it can be said that the thesis have a valid and credible foundation for research. Chosen research strategy, diverse sources of information and data analysis are claimed to be valid.

3. THEORY OF BUSINESS WAR-GAMING

This section is divided into two main parts. The first part explains the development, application, pros and cons of business war-gaming, providing an overview of theory to aid the reader to better understand the second part. The second part will compare two different business war-gaming frameworks. Based on the comparison, framework introduced by Gilad was chosen for an elaborate explanation, since it was used as a basis for collection of empirical data.

3.1. DEVELOPMENT OF BUSINESS WAR-GAMING

Same as military war-gaming, business war-games also have went through development process and improvements in application. First application of military war-gaming methodology in business context appeared in 1960s, where an article in Harvard Business Review described military war-gaming application for educational purposes. The approach focused on two main categories, functional games that centred on topics of optimizing production, finance or marketing and general games that focused on management decisions that affect development of company (Oriesek and Schwarz, 2008).

Most recent developments of business war-gaming cover areas as strategy formulation as well as validation of existing strategy (Kurtz, 2003). Currently strategy company Booz Allen Hamilton claim to have the most extensive experience in business war-gaming. Company's scope of business war-gaming concept application span from strategy formulations, crisis response to change management, education as well as recruiting efforts (Herman *et al.* 2008).

3.1.1. DEFINING BUSINESS WAR-GAMING

As business war-gaming is a developing concept there is no commonly one accepted definition of the approach. Some authors refer to war-gaming as a simulation of competitive sales and marketing situation, designed in a way to identify competing messages that could threaten product's strategic position and effectiveness of tactical execute (Vanderveer and Heasley, 2005). According to Krutz (2003) essentially business war-gaming is: *"a role-playing simulation of dynamic business situation. It involves a series of teams, each assigned to assume the identity of and entity with a stake in the situation."*

Analysing the different sources (Gilad, 2008; Oriesek and Schwarz, 2008; Herman *et al.* 2008 and others) a clear pattern can be identified that is shared by most authors is that business war-gaming provides a safe environment, where through role-playing decision makers can test their strategies, develop foresights or analyse competitor's behaviour and increase the quality of their decision making.

3.1.2. TYPES OF BUSINESS WAR-GAMING

Identifying specific types of business war-games proved to be quiet challenging; since not many authors define specific categories and no common approach on categorizing them have been identified.

Gilad (2010) refers to three different basic types, namely computer-based war games, game-theory-based war games and competitive-intelligence role-playing-type war games. A significantly different view is shared by Bracken (2001). He also identifies three types, where first is technology integration games (purpose is to discover what obstacles might occur once new IT system is implemented),

second path games (simulate a longer period of time, with two or more moves where teams have to make different decisions in specified environment) and third shadow games (allows company's top management to play out sensitive strategies without being involved in the game as such). Other authors (Bell, 1997; Watman, 2003) emphasize relevance of business war-gaming for training and education, thereafter introducing their own categories.

Examples above clearly show diversity in this field, supporting the fact that business war-gaming is still at an early stage of development and application. Academics as well as professionals have not created a common view on how to categorize business war-games. Through assessment of literature written by established authors in the field (Gilad, 2008; Herman, Frost and Kurz, 2009; Orišek and Schwarz, 2008) a pattern can be identified that they mainly refer to competitive intelligence role-playing type of business war-gaming, further theory will focus on application areas for this type of business war-game.

3.1.3. APPLICATION OF BUSINESS WAR-GAMING

Many authors (Courtney *et al.* 2005; Schwarz, 2011; Gilad, 2008; Herman, Frost and Kurz, 2009) talk about different application areas for business war-gaming. Orišek and Schwarz (2008) provide a comprehensive list of application areas. Authors introduce a non-exhaustive list that covers application fields of strategy testing, crisis response preparation, developing foresights, change management, training and recruiting. In addition according to Grant (2003) and Rigby (2005) strategic planning has been identified as the most commonly used tool in management and it continues to play a central role in management systems at large organizations. Also it is argued by authors (Orišek and Schwarz, 2008) that a strategic plan foresees a specific course of actions and is quiet intervened with developing foresights. Taking into account the mentioned aspects a conclusion can be drawn that business war-gaming most effectively can be used in testing strategic plans. Therefore application areas in strategy testing and development of foresights will be discussed shortly.

Strategic testing is the most known application area for business war-gaming. Underlying idea is to test an existing strategic plan in competitive environment, challenge key assumptions and discover weaknesses. Business war-games create an environment where imagination is put in to reality boundaries in order to reach set objectives and test a specific strategy in close to real life environment.

Development of foresights has been identified as major activity for any organization which wants to develop a picture of future and react before competitors (Hamel and Prahaladm, 1995). It has been even more important since business environment and markets are becoming much more complex and dynamic (Day, 2011). Authors (Schwarz, 2011; Gilad, 2008; Herman, Frost and Kurz, 2009) claim that business war-gaming is an efficient tool for organizations to develop foresights due to reasons that it is not only analytical, but also participative, i.e. participants are forced to think ahead, review their assumptions of future critically and question their own mental models.

3.1.4. ADVANTAGES AND WEAKNESSES OF BUSINESS WAR-GAMING

Unifying advantages of business war-gaming addressed by many authors (Courtney *et al.* 2005; Horn, 2011, Schwarz, 2011; Gilad, 2008; Herman, Frost and Kurz, 2009; Fleisher and Bensoussan, 2007) can be captured in ability to test strategic plan in a dynamic, close to real-life environment and identify that specific plans` intelligence gaps, blind-spots, weaknesses, strengths etc., active involvement of

participants and role-playing facilitate creative problem solutions, team building and effective learning. Also most authors emphasize the fact that business war-gaming provides a better understanding of competition and their possible moves that can be affected by developed strategy and allows developing foresights for an organization. Gilad (2008) highlights that war-gaming creates a buy-in for the participants, i.e. they learn to trust their strategy since they have seen many of possible set-backs as well as opportunities.

According to Gilad (2008) disadvantage to war-game is that it allows focusing mainly on one player or industry at a time. Also author identifies several criticism points, namely cultural mismatch, management issues, commitment to follow-up and the fact that not all leaders are open to test their developed plans. Other authors (Herman, Frost and Kurz, 2009) emphasise the fact that business war-gaming can be quiet resources demanding, i.e. costs of development of business war-game, involvement of key management and participation in at least one day activity. A weakness of a business war-gaming is the fact that it cannot assess the best possible strategy to be implemented; it can only assist in making a better, more close to real-life decision. Fleisher and Bensoussan (2007) identifies the fact that business war-gaming is quiet time consuming process, since preparation for a session might require weeks or months, depending on the difficulty, depth and learning outcomes of the business war-game.

3.2. BUSINESS WAR-GAMING FRAMEWORKS

As discussed previously common guidelines or definitions for business war-gaming among the practitioners and academics has not been developed yet. Although most of business war-games share similar design process, the execution and tools that can be applied vary a lot, since also established authors and practitioners (Oriesek and Schwarz, 2008; Herman, Frost and Kurz, 2009; Chussil, 2002) point out that essentials of a game is highly dependent of each specific case. These authors also share similar opinions in executing a business war-game, model of a session is shown in Figure 2 below.

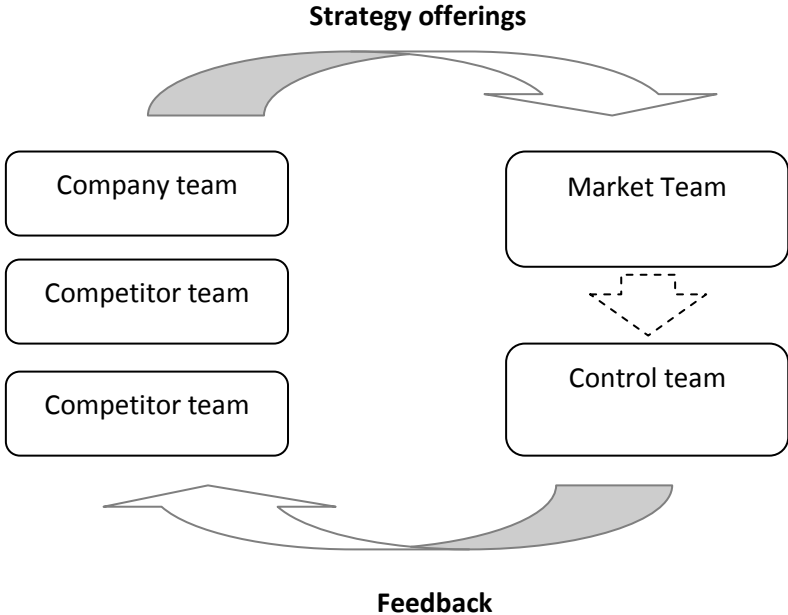


FIGURE 2: ELEMENTS OF BUSINESS WAR-GAMING SESSION; SOURCE: ORIESEK AND SCHWARZ, 2008

Executing such business war-games demand a significant time of preparation to design the session, also sophisticated software solutions are used to calculate market responses to team strategic moves. Referees or controllers are involved, who are checking whether participants are following set rules. All this shows that these are business war-games of high sophistication, involving significant planning process and participation of external consultants, who have had experience in running business war-games. All the mentioned aspects can make business war-game very costly, complex and time consuming both in preparation and execution.

Contrary opinion is shared by Gilad (2006, 2008, and 2011), who emphasizes the fact that business war-games should be simpler without the use of external consultants and sophisticated software that analyses each teams moves and market responses, where simulators often fail to realistically predict outcomes. According to the author simple, quick, inexpensive and realistic business war-gaming can be applied to increase quality of decision making or anticipate the potential impact of broad range competitive actions for an organization. Author states that role-playing can more realistically predict human and organization behaviours than sophisticated software solutions.

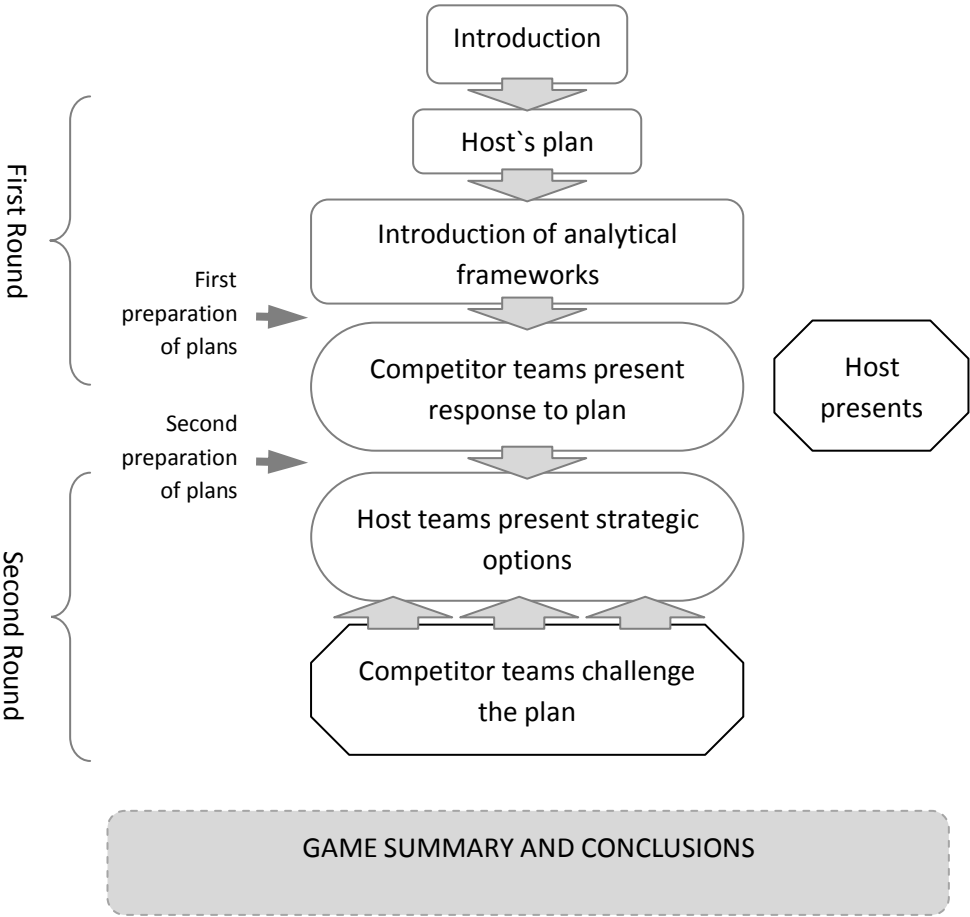


FIGURE 3: BUSINESS WAR-GAMING SESSION SCHEMATIC; SOURCE (GILAD, 2008)

Gilad (2008) provides a step by step process, which implies use of different analytical tools and behavioural models that are known to managers, e.g. Porters 5 Forces or Porters Four Corners model. Business war-gaming session process introduced by Gilad (2008) is shown in Figure 3. It can be seen that model is much simpler and linear compared to business war-game session showed earlier. Author points out that running small scale and simple business war-gaming sessions with unit

managers and people involved on project level will drive more value to an organization than large, software based and consultant driven business war-gaming session. Gilad claims that in order for a war-gaming session to be effective it has to be realistic, empowering, accessible, lots of fun, inexpensive, simple and transparent.

Analysing both introduced frameworks in terms of applicability to master thesis environment, authors experience in the field, successful case studies of approach application in practice and sophistication level of business war-gaming approach several conclusions were driven. The approach introduced by Chussil (2005), Schwarz (2011) and Herman *et al.* (2009) provides a higher level of sophistication once executing business war-gaming simulations due to use of complex software applications and involvement of experienced consultants. However, framework provided by Gilad (2008) and assessed case studies have showed that use of this approach deliver similar value to an organization as much more sophisticated business war-gaming sessions introduced by the other authors. In addition Gilad's (2008) approach provides a more hands-on and practical knowledge for people with limited experience in business war-gaming, which is the case of the thesis authors' situation. Additionally proposed approaches were discussed with mentor at Nestlé Product and Technology Centre (PTC), who were involved in thesis process and had experience in practical use of business war-gaming in IP management. Author presented both frameworks and introduced their advantages and disadvantages. After the discussions it was also suggested to use business war-gaming framework introduced by Gilad. Taken into account the mentioned aspects framework introduced by Gilad much better matched the knowledge and experience of the author and the thesis environment as such.

3.2.1. BUSINESS WAR-GAMING FRAMEWORK BY GILAD

Gilad (2008) provides a comprehensive theoretical framework that identifies several steps; starting from when to use business war-gaming to designing and executing of the session. Most of business war-games answer two fundamental questions, i.e. what will competitor do and how can we as an organization be smarter than them. Gilad provides non-exhaustive lists that suggest in which cases business war-gaming can be a very efficient tool:

- i. meeting changes in market conditions;
- ii. launch of a new product or service;
- iii. new market entry;
- iv. increase market share;
- v. revive a brand;
- vi. defending against substitutes, new products or other growing threats;
- vii. testing of strategic assumptions;
- viii. competitive assessments of organizational structures and communication channels;
- ix. testing of product or service introduction timelines;
- x. simulation of competitors reactions to strategic moves;
- xi. simulation of outside environmental reactions to strategic moves (government, vendors, suppliers, customers);
- xii. identification of internal and external constraints;
- xiii. benchmarking of current practices;
- xiv. mergers and acquisitions and other growth opportunities;
- xv. identification of existing or future gaps in the market;

- xvi. competitive assessment of structural changes within the industry;
- xvii. assessment of risks – current and emerging;
- xviii. identifying core brand message and strategy;
- xix. understanding information or intelligence gaps;

Once the situation is identified further step that needs to be completed is to select the type of business war-game that should be used. Gilad (2008) suggest two different types of games where first focuses on developing a new plan and second for testing an existing plan. He refers to them as landscape games and test games and argues that selecting the type of game is basically already done once a situation has been identified.

3.2.1.1. LANDSCAPE GAMES

Landscape games answer two fundamental questions:

- i. What will competitors do?
- ii. How can we outsmart them?

Main objective of these games is to identify and examine competitive landscape and place the organization in the best position given the current and future conditions of a market and possible competitor response. All the aspects taken into account can allow creating a superior strategy. Gilad (2008) argues that assessment of competitive landscape is not needed, unless there is urgent sense of change or that landscape will change drastically and unfavourably for an organization. Sometimes managers believe that competitive landscape is known quantity with no changes and they develop strategic plans that mainly look for improvements inside an organization. Assuming that market is in a stable state is very misleading, since it is dynamic due to changes in customer needs as well as new innovation can drastically change a market (Gilad 2008; Vanderveer and Heasley 2005; Day, 2011). This suggests that landscape games should be played in order to actually understand company's position in a market.

3.2.1.2. TEST GAMES

Test games answer similar fundamental question as landscape games, however is used for slightly different purpose:

- i. How will competitors react to our plan?
- ii. How can organization proof the plan against our competition?

Overall objective of test games is to test an already developed strategy against the likely responses of market, competition, government, legislators, suppliers etc. Gilad (2008) claims that these are the most popular type of business war-games that are played due to reasons that in larger organizations it is more reasonable for brand team or new product group to develop a strategy and then test it against the different implications closer to execution of a specific plan.

3.2.1.3. IDENTIFYING THE COMPETITION

According to Gilad (2008) based on the situation or decision that needs to be assessed, competition usually presents itself. Mainly direct competitors, who are similar, employ same strategies or produce same products are selected for business war-games. If there are many competitors to include in a business war-game, usually largest actor or actor with largest market share are chosen.

However smaller actors that are owned by large corporations can be turned into a threat with a support of the mother company and they cannot be ruled out, but should be assessed whether they can pose any threats.

A situation, where no market leader exist and all players are equal can be quiet difficult to identify which actors to include or exclude in a business war-gaming session. Thereafter Gilad (2008) propose to use a tool developed by Porter (1980), where companies in the same industry follow the same or quiet similar strategy and can be clustered as one unit. This unit would represent itself in a business war-gaming session. It is possible that in other industries there are no clusters and companies use similar strategy and competing on improving operational effectiveness. According to Porter (1980) it has been identified as competitive convergence. Thereafter in such situation it is easier to look at competitor tactics, which pressure the market, which have better products or additional services.

In industries, where third parties, e.g. regulatory bodies, standard setting organizations, play significant role it is important to include them in a business war-gaming session. Since these actors can significantly impact developed strategic plan and influence market trends. However Gilad (2008) points out that business war-gaming is only about competitors, other actors in industry can be assessed through analysis of competitors` strategies, capabilities, goals and management assumptions.

3.2.1.4. CREATION OF TEAMS

Assembling of teams is important step in creation of a business war-game. Gilad (2008) argues that in a business war-game; unreceptive management or executives with strong personalities that can significantly damage the process of a session should be avoided. Participants should be divided into different teams that represent competitors and share their competences across diverse fields of focus and experience. Gilad identifies three overall criteria to look for when selecting participants. It should be people who:

- i. can characterise very well competition, due to work experience or other contact,
- ii. will fully support the decisions, outcomes of a business war-gaming session;
- iii. have extremely good knowledge about the product or the market.

It can be considered to invite external bodies, e.g. ad agencies, customers or research vendors; however this might cause issues with confidentiality as well as add extra costs to a business war-gaming session. It is very important to have a team that represents the company, which is organizing the game, since they will be the ones that will perform blind spot analysis to identify weaknesses in developed plan.

Gilad (2008) is the only author in the assessed literature that emphasizes utilization of small business war-gaming sessions involving middle management and running a session maximum one day. He argues that size of the teams shouldn`t be very large from 12 – 48 people representing 2 to 6 competitor profiles, since those people provide a critical mass to energize the session and bring other perspectives to the plan.

3.2.1.5. COLLECTING COMPETITIVE INTELLIGENCE

Business war-gaming is considered to be the only method that systematically gathers external information, which is then used by participants when role-playing competition (Gilad, 2008).

Thereafter competitive intelligence constitutes a major part of a session and by many authors is identified as key aspect (Chussil, 2005; Schwarz 2009; Gilad, 2011; Kurtz 2003). Competitive intelligence is used to understand the industry specifics and characteristics of competitors.

Information about competitors is used before and during war-gaming session to help participants perfectly role-play their competitors and build a believable character. To define the characteristics of competitor a set of questions should be answered and data gathered from multiple sources. Questions to be answered can span from what is competitors relationships with others (collaborations, joint-ventures) to where R&D money is invested (Patents, technology patterns). To answer such questions news articles, information from annual report, companies’ website, databases and other sources can be used.

3.2.1.6. SUMMARIZING PROPOSED FRAMEWORK BY GILAD

In Figure 4 thesis author summarizes the theoretical framework proposed by Gilad (2008). Overall the framework involves two major steps before running a business war-gaming session. First step can be identified as the design process, where there are two main objectives. Identify the situation and application area, after decided on what type of game is going to be design, whether a game to test a strategy or to assess organizations current strategic positioning. Second major step involves gathering intelligence, whereas the first object is to identify characteristics of the market in which

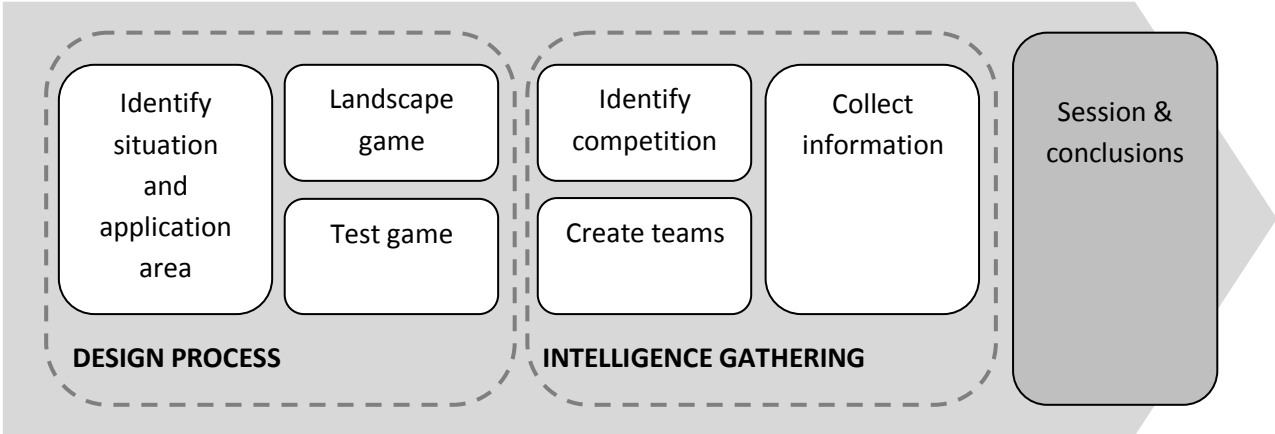


FIGURE 4: BUSINESS WAR-GAMING FRAMEWORK DESCRIBED BY GILAD (2008)

war-gaming will take place and recognize competitors` that are part of this industry. In the meantime teams should be created. Second objective is to collect information about competitors and how they act, perform in that specific industry from different sources, e.g. publications, databases or interviews. These two steps are crucial before the execution of a good quality war-game session that would provide significant insights for any of the mentioned cases listed in the introduction of this part.

4. SURVEY DESIGN

This section describes the design process of the survey, where main theoretical aspects from survey design theory were taken into account.

The goal of this survey is twofold. The first part is to understand whether business war-gaming can help IP professionals to solve management challenges they are facing in their work and the second part is to investigate the practical use of business war-gaming in IP management.

Iarossi (2006) says that it is important to define the goal of the survey, since it will determine selection of different relevant aspects such as audience, application method, scale as well as types of questions. Once a research goal is identified he suggests executing seven main aspects of survey design, which are covered in the following parts.

4.1. SELECTING TARGET AUDIENCE AND EXECUTION PROCESS

Selection of target audience is a critical point since it determines the outcomes of survey. Based on the goal of the survey target audiences were people that are dealing with management of Intellectual property on a daily basis across different industries:

- i. Intellectual Property/Asset managers
- ii. Legal counsel in Intellectual Property;
- iii. Chief Intellectual Property Officer;
- iv. Patent attorney.

Target audiences were contacted through networking site LinkedIn and other internet based communities such as IAM magazine and INTIPSA organization. Further steps involved were making the link of the survey public. This method allowed gathering information from a larger auditory, thereafter thesis author was able to gather data from IP professionals in different industries, which wouldn't be easy to do using face to face or phone interviews. Although this type of approach might lead to lower response rate and possibly poorer quality of data, however author believes that with structured and efficient distribution of the survey these setbacks will be limited.

4.2. TYPE OF QUESTIONS

To be able to gather both quantitative and qualitative data from one survey "open-ended" and "closed-ended" types of questions were used.

Text "open-ended" questions were used that allowed respondent to elaborate on their answer and share information that seems most appropriate for him/her. This allowed identifying and exploring characteristics that might not be covered by "closed-ended" questions. However, several problems can be identified due to freedom of response for respondents, i.e. some answers can be ambiguous or others can be in a contradictory fashion or also it can be so that answers are completely different in regards to posed question. Conclusion is that it is quiet hard to categorize open-ended questions, since no or little control is over the answers.

To collect quantitative data multiple choice, Likter-scale and categorical type of questions were used, examples are provided in Figure 6. Main advantage is that these types of questions are used in confirmatory research therefore clearly approving or disapproving identified subject matter. Less time is necessary for respondent to answer these questions; therefore higher response rate can be

achieved. Main disadvantage that can be identified is difficulties in designing appropriate questions and these types of questions have much less depth and substance and may force invalid responses

“Open-ended” question:

What are the main challenges working as IP manager?
M: (Answer provided by manager) _____

“Closed-ended” questions:

Multiple choice

Which of following activities are you dealing with in daily life (Multiple answers can be chosen)?

- Patent search
- Patent landscaping
- Competitor patent identification
- Other _____

Likter-scale

To what extent competitor analysis help in IP management (Please select one)?

Not very important 1 2 3 4 5 extremely important

Categorical

Do you monitor your competitor activities?

- Yes
- No

FIGURE 5: SAMPLES OF TYPES OF QUESTIONS USED FOR SURVEY

(Seibert, 2002).

Once the type of questions were identified the following suggestions from Iarossi (2006) were taken into account in relation to wording of questions:

- i. *Question length.* Most of the questions were made simple and easy to understand for respondent, where maximum length of the question wasn't more than 25 words.
- ii. *Objectivity.* Questions didn't have leading or loading manner that might promote some feelings and drive respondent, since it might affect accuracy and objectivity of survey results.
- iii. *Simplicity.* Simple language was used to facilitate understanding of topic to respondents without theoretical knowledge in the subject matter.
- iv. *Specificity.* Mainly very precise and targeted questions were designed to lead to answers that are objective.

4.3. DESIGN OF SURVEY QUESTIONS

As addressed above the survey was divided in 2 main parts. First part identifies whether business war-gaming can be a useful tool in IP management. Second part looks at practical use of business war-gaming in IP management. In both parts business war-gaming framework introduced by Gilad

(2008) in chapter 3 was used to create the specific questions to reach the purpose of this thesis. In second part the questions are logically aligned from the identification of situation to benefits of business war-game (see figure 4). In this part the thesis author explains why these specific questions were asked and how they relate to theory. The full survey and questions of each part are attached in the appendix of this master thesis.

BUSINESS WAR-GAMING APPLICATION IN IP MANAGEMENT

- i. Identifying whether IP professionals across different industries are facing management challenges that can be solved by business war-gaming.

In chapter 3 of this master thesis a business war-gaming framework introduced by Gilad (2008) was presented. In 3.2.1 section the author provided a non-exhaustive list that suggested in which cases business war-gaming can be a very efficient tool. Several cases were chosen by the thesis author and some were slightly modified in order for the target audience to feel more familiar with the situation. For example, comparing the two cases - *testing of IP protection strategy (modified by thesis author)* and *testing of strategic assumptions (case identified by Gilad)* - show that the transformation is very small, since both cases convey the same core setting whereas the thesis author created case is more specific to IP management situation. Thesis author argues that the slight modifications do not impact the cases addressed in theory and allows creating valid analysis. For purpose of the survey eight cases were chosen to investigate whether IP professionals are facing the management challenges where business war-gaming can be used as a tool to solve them.

USE OF BUSINESS WAR-GAMING IN IP MANAGEMENT

- ii. Identifying situation and application area

From 3.2.1 to 3.2.1.2 sections in business war-gaming framework proposed by Gilad addresses the different the situation in which the tool should be used, which is regarded as the first step. The thesis author designed an open ended question to ask respondents to identify the 3 main criteria used once they are choosing in which situation business war-gaming should be applied. The thesis author argues that this question gives a more specific understanding in which cases business war-gaming is applied in practice in IP management and also suggests what type of business war-games are played, i.e. test games or landscape games.

- iii. Identifying competition

Once the situation and type of game have been identified the next step is to find the competition. In theory in section 3.2.1.3 Gilad argues that usually after first step the competition presents itself. However, the author says that mainly organizations that are using similar strategies or creating the same products are used. The thesis author created a set of options that fall in the scope of the theory, which allowed understanding the common criteria for selecting a competitor in IP management.

- iv. Creating teams

In the theoretical framework by Gilad in section 3.2.1.4, creation of teams and selection of the participants is one of the most important factors to successfully execute a business war-game. In the

assessment of Gilad framework, three overall criteria to look for participants in business war-game were proposed. Author used criteria to create a list of relevant options, which according to the thesis author fall under the scope of identified criteria in the theory. Based on the relevant options participants were asked to identify three main criteria that are used when they are choosing participants to take part in a business war-game.

In relation to size of teams, Gilad which among all assessed authors puts emphasise on small and effective business war-games, indicates that at least 12 people should participate in one session, since that is the minimum amount for energizing a session. The thesis author created a question where respondents needed to indicate the amount of participants in one business war-gaming session.

Gilad (2008) suggests that at least two and maximum six competitor profiles should be assessed during one business war-gaming session. Respondents were asked to identify the amount of competitor profiles assessed in one business war-game for the thesis author to be able to understand the practical implications of the session execution in IP management.

v. Collecting intelligence

In the theory in section 3.2.1.5 Gilad (2008) argues that collecting information about competitors is one of the cornerstones of successful business war-game session, since it allows understanding industry specifics, competitor profiles and the way they act in a market. However in the proposed business war-gaming framework no suggestion in regards to practical collection of information was not discussed. Thesis author with the help of experienced IP professional created a set of questions to have an overall understanding on how IP professionals in different industries collect and manage the information about their competitors. Three main aspects were covered. First, an open ended question was asked to IP professionals to indicated the main tools, e.g. patent databases, industry reports, internet, were used to collect information about competitors. Second, it was asked to identify how regularly the information was collected. Third, respondents needed to answer how the information is managed, whether it is saved and accessible to other stakeholders.

vi. Analytical tools used in business war-games in IP management

In theory in section 3.2 paragraph 3 the use of analytical tools to analyse the competitor behaviour, own organization as well as market is mentioned. Gilad in theory referred to several commonly known analytical tools such as SWOT analysis, Porters 5 forces, Porters Four Corner model and blind spot analysis. He emphasized that is not important what kind of tools are exactly used as long as they facilitate a structured approach to the session and help the participants to analyse a competitor and own company. The thesis author created a set of options, which included analytical tools suggested by Gilad and more IP management specific tools, which were chosen based on the thesis author experience and knowledge.

vii. Benefits of business war-gaming in IP management

In section 3.1.4 paragraph 1 the benefits of business war-games addressed by different authors were covered. Authors identified general benefits like, possibility to understand weaknesses or blind spots of a strategic plan or better understand competition. Since the benefits are quiet general in theory the thesis author together with an IP professional, who have participated in a business war-game in

IP management, created several options that fall in the scope of theory, however are more specific in relation to IP management. The thesis author believes that it allowed IP professionals much easier relate to the situation and allowed the thesis author to gather better results.

viii. Identifying demographics of respondents

In this study respondents across different industries were surveyed and it was important to understand the specific industry they represent, size of their organization and position. Since that allowed thesis author driving analysis and conclusions in relation to different industries.

4.4. FORMAT OF SURVEY

On-line surveying software was used to gather results, since the software is able to meet the format of identified questions and present them in a user friendly manner. Due to the software versatile design, author was able to implement main parts of survey format, which according to Iarossi (2006) should include:

- i. *Title of the survey.* Title was made attractive enough for interviewee to motivate in participation and descriptive to convey main idea and goal of the survey;
- ii. *Name or identification of an interviewee.* Since the survey was confidential this aspect could not be taken into account, but did not damage the collected
- iii. *Disclaimer.* Since survey claimed to be anonymous it was made clear to respondents which specific information will be available to the public and which will be kept secret;
- iv. *Introduction.* In order to get acquainted with goals of a study and main objectives, an introduction to the topic was provided;
- v. *Instructions.* To avoid any confusion when answering to survey questions clear and straight forward instructions were provided to responders;

4.5. TESTING OF SURVEY

After testing the survey valuable suggestions were received from 4 IP managers in different industries that helped to improve the survey. Suggestions and corrections that were addressed:

- *More elaborate introduction to survey and business war-gaming concept*

Three of four respondents addressed the necessity to include a more elaborate introduction to the survey that would more explicitly not only state the goal of this survey, but also shortly explain the business war-gaming concept.

- *Two questions were found to be confusingly similar –*
 - *Point out 3 main criteria you normally use for **defining** competitor?*
 - *Point out 3 main criteria you normally use for **identifying** competitor?*

Two of four respondents addressed an issue that the above questions were considered to be confusing and similar. Solution to this problem was to remove the question, which implied the word “defining”. Thesis author argued that by removing this question will simplify the survey and will not cause confusions to respondents and will not significantly impact the quality of gathered data.

Good feedback was received from respondents, who addressed that questions were clearly formulated and easy to understand. As well as questionnaire is designed in a way that it is not time

consuming for respondent, which was identified as a major issue for other surveys among the respondents. Although this might indicate for a lower quality of data, respondents expressed that questions asked were relevant and seemed to be well aligned with the goal of the survey. Also using online survey tool was received very good by respondents, since they addressed that it was intuitive and easy to understand for the user.

According to Iarossi (2006) testing survey design is quite crucial aspect. It helps to identify potential problems, setbacks, quality issues, or adequacy of questions as well as estimate time needed to respond the survey. To test the survey Conventional method was used, which involves a small number of interviews that is followed by a discussion of the experiences and problems encountered in a survey. This method was considered to be good match for environment of thesis, since the application of it is effective and easy to understand.

5. FINDINGS FROM THE SURVEY

This section covers both the observations and analysis of the collected data from surveying Intellectual Property (IP) professionals across different industries to respond identified research questions in the beginning of this thesis. First part looks at the empirical data gathered that identified whether IP professionals across different industries are facing management challenges which can be solved by business war-gaming. Second part of this section identifies the practical use of business war-gaming in IP management across different industries.

The survey collected answers from 31 respondents across different industries, whereas almost 75 % or twenty 23 responses were of good quality, i.e. respondent answered almost every question in the survey. Most of the unanswered questions by respondents were the open ended questions. It can be assumed that the reasons for low response rate to this type of questions can be related to time constraints, meaning that answering such questions takes more time, focus as well as creativity from respondents. Also questions were respondent could not give input due to his experience or background were not further showed to him/her in the survey.

5.1. BUSINESS WAR-GAMING APPLICATION IN IP MANAGEMENT

In this part description and analysis of empirical data are covered, where author asked respondents to identify how relevant the different cases are in relation to their daily work as IP professionals to identify whether business war-gaming can be an applicable tool in IP management. The results are showed in Figure 6 below.

5.1.1. DESCRIPTION OF EMPIRICAL DATA

Observing the data it showed that 23 responses were collected to this question.

- In relation to *testing of IP protection strategy* case 5 respondents replied that it is very relevant, 5 said it is relevant, most or 9 respondents replied that it is quiet relevant, 2 said it is relevant in some cases and 2 responded that it is not relevant at all to their daily work as IP professional.
- Regarding the *understanding competitive environment* situation 6 IP professionals said it is very relevant, most or 11 responded that it is relevant, 4 replied it is quiet relevant, 1 said it is relevant in some cases and 1 replied that it is not relevant at all.
- Concerning the case – *assessment of risks to your company today* – most of respondents or 9 replied that it is very relevant, 6 said it is relevant, also 6 respondents that it is quiet relevant, two responded it is relevant in some cases and none respondent that the situation is not relevant at all.
- Regarding the situation of *Identification of possible risks to your company in future*, 7 responded it is very relevant, 8 said it is relevant, 7 indicated that this situation is quiet relevant, 1 said it is relevant in some cases and none respondent that the situation is not relevant at all.
- In relation to *understanding competitors` reaction to strategic moves*, 4 indicated this case as being very relevant, 6 said it is relevant, 9 responded that it is quiet relevant, 2 said the situation is relevant in some cases and 1 said it is not relevant at all.

- Concerning situation of *simulating competitors reaction to a strategic move*, 4 respondents said it is very relevant, 5 indicated it is relevant, also 5 replied that it is quiet relevant, 5 said it is quiet relevant and 3 responded that it is not relevant at all.

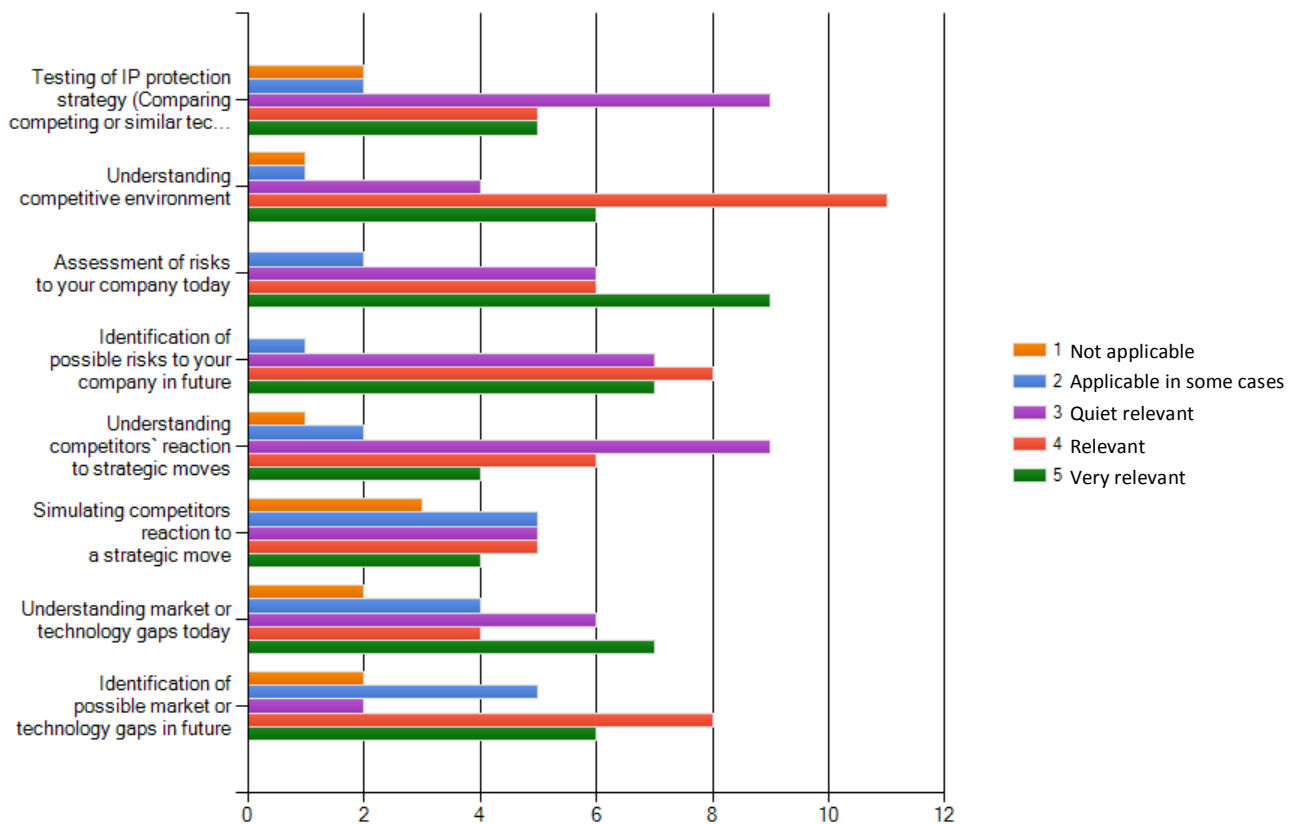


FIGURE 6: BUSINESS WAR-GAMING APPLICABILITY IN IP MANAGEMENT

- Regarding the case of *understanding market or technology gaps today*, most or 7 respondents said that it is very relevant, 4 indicated it is relevant, 6 replied it is quiet relevant, 4 said it is relevant in some cases and 2 responded it is not relevant at in relation to their daily work.
- In relation to the last situation – *identification of possible market or technology gaps in future* – 6 respondents said it is a very relevant situation, 8 indicated this as a relevant situation, 2 said it is quiet relevant, 5 responded that it is relevant in some cases and 2 said it is not relevant at all.

5.1.2. ANALYSIS OF EMPIRICAL DATA

After initial analysis it can be seen that most of the IP professionals see the identified cases as relevant to the management challenges they are facing. On average the most relevant activity for IP professionals is to understand competitive environment, which is followed by assessing the risks of their respective companies today and in future. It can be seen that simulating competitor reaction to a company's strategic move is not that common, since three respondents replied that it is not applicable to their work at all, but on the opposite four respondents replied that it is very relevant to their work.

Once analysing the empirical data from demographic perspective, it was interesting to see that wide range of industries were represented, where the most respondents were from pharmaceutical (5 respondents), energy (3 respondents), food and beverage (2 respondents) and automotive (2 respondents) industries. Also the demographic data showed that mainly two size companies were represented, i.e. smaller companies with up to 750 employees (8 responses or 35 % of total) and large corporations with more than 5000 employees (10 responses or 43 % of total).

For author it was hard to identify significant patterns in the industries and sizes of organizations, since the average results of data did not show significant patterns. The data set was correlated and the author of thesis compared the two extremes of data, where respondents replied very relevant and not relevant at all. The analysis was done by looking separately at one case, which describes the essence of business war-gaming application and was identified by the thesis author based on his knowledge, experience and through analysis of business war-gaming theory.

When looking at the extremes of identified case – *testing of IP protection strategy (comparing competing and similar technologies, identifying setbacks and opportunities etc.)* – it was interesting to see that two professionals, which response was negative were energy (more than 5000 employees) and consulting (up to 750 employees) industry representatives. Five responses that identified this principle as very relevant represented industries such as pharmaceuticals (3 responses, two organizations up to 750 employees and one with more than 5000 employees), biotechnology (up to 750 employees) and telecom (1,500 to 2000 employees), telecom industry will not be taken into account, since only one response is collected and cannot allow identify specific patterns in telecom industry. This situation addresses the essence of business war-gaming practical application it can be observed that smaller and larger organizations in biotechnology and pharmaceutical industry regard this principle as very relevant to their work. Thesis author argues that both industries are similar due to their nature, activities in similar markets and IP recognition, where especially patents play significant role in generating value for organization. Author assumes that such organizations are constantly looking for new tools or solutions that can allow them to improve their IP management processes, since IP is considered as very important aspect for growth and development.

Author concludes that empirical data clearly show that most of the respondents representing different industries were able to relate to the cases where business war-gaming can be applied. Of course there are several respondents that cannot; however these represent just a minor part of all the empirical data. Although the collected data is not significant in size, it shows that organizations with different sizes and across different industries were represented in this study. Comparing the two extremes in relation to the case of testing IP protection strategy interesting insights were revealed that showed that organizations in pharmaceutical industry see business war-gaming as very relevant.

5.2. USE OF BUSINESS WAR-GAMING IN IP MANAGEMENT

This part of the findings identifies how business war-gaming is practically used in IP management. Thesis author used Gildea proposed business war-gaming framework that include, selection of business war-game, identification of competitors, creation of teams, collection of information about competitors and use of analytical tools. The theoretical base of the sections was used to create relevant questions for author to be able to identify practical use of business war-gaming in IP management. This sub-section is concluded by understanding whether IP professionals are getting

similar benefits from business war-gaming as addressed in literature. The reasons why these questions were asked are addressed in chapter four.

5.2.1. IDENTIFYING SITUATION AND APPLICATION AREA

The qualitative data collected from 14 IP professionals was quiet different, though two trends could be observed. One trend was that business war-gaming is used to test an IP protection strategy either to a key, breakthrough technology of own organization or a key product of competitor. Second trend was that respondents used business war-gaming to test IP strategy of technologies that have high potential either in market, licensing or litigation.

As Gilda (2008) states in theory once a situation is identified the selection of type of business war-game has been done. Analysing the responses author concluded that organizations across different industries are using both type of business war-games, i.e. test games to test their own IP strategies of an important technology or key product in a business war-game session. Also landscapes games are used where organizations understand their position in a technology market in relation to competitors, where litigation and prosecution are aspects taken into account to shape the environment.

5.2.2. IDENTIFYING COMPETITION

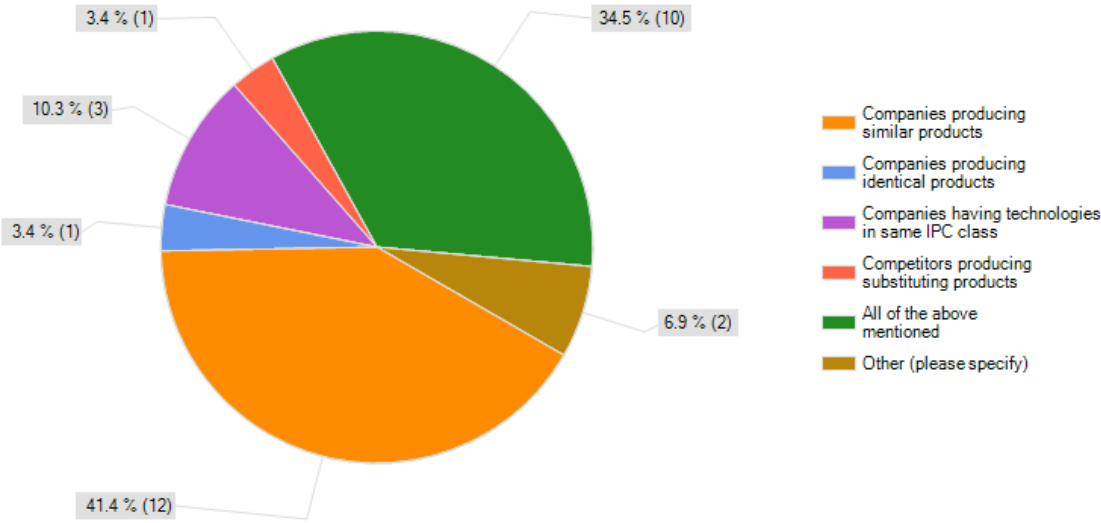


FIGURE 7: CRITERIA FOR IDENTIFYING A COMPETITOR

Observing the gathered data in Figure 7 above, showed that in total 29 persons responded to this question:

- 12 respondents mainly look at the companies, which are producing similar products;
- 1 respondent looks at companies producing identical products;
- 3 IP professionals look at companies having technologies in the same IPC class;
- 1 respondent look at competitors producing substituting products;
- 10 respondents take into account all of the mentioned aspects and two respondents use other criteria to identify competition.

Analysing the criteria that respondents use to identify their competitors, 40 % of respondents take into account the companies which are producing similar products. Furthermore the other part of respondents mainly looked at all the identified criteria that were available for the question. Interesting that one respondent identified those competitors, that are filing similar patent applications and that might limit their freedom to operate, are considered as competitors.

Author concludes that mostly companies which are producing similar products are regarded as competitors, which also seem to be relevant in relation to theory.

5.2.3. CREATING TEAMS

In total 16 participants responded to this question.

- Regarding the criteria of *business war-game participants` involvement in protected technology development*, 8 respondents chose this criterion.
- In relation to *knowledge in intellectual property* criterion, 11 respondents indicated this criterion.

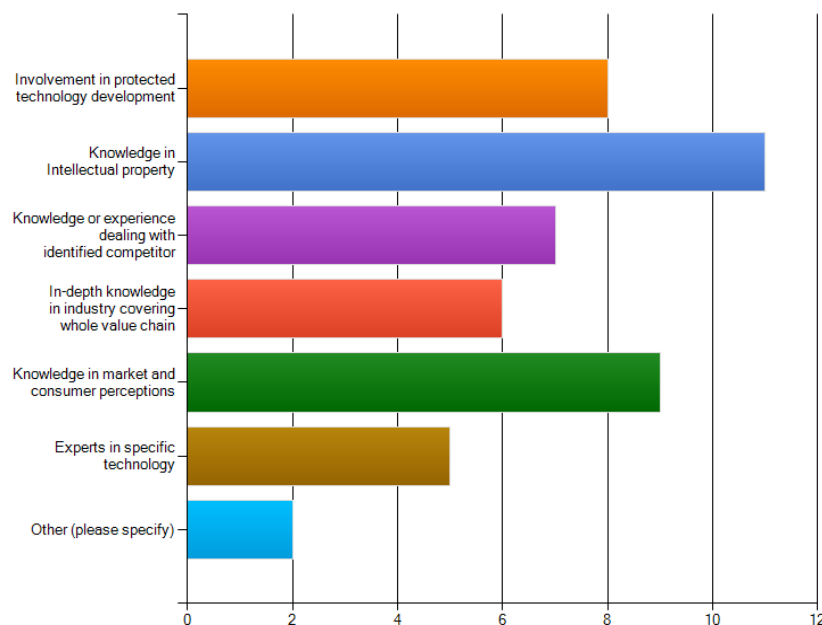


FIGURE 8: CRITERIA USED TO IDENTIFY PARTICIPANTS FOR A SESSION

- *Knowledge or experience in dealing with identified competitor* criterion was chosen by 7 respondents.
- In relation to criterion of participants` *in depth knowledge in industry covering whole value chain*, was chosen by 6 IP professionals.
- *Knowledge in market and consumer perceptions* criterion was indicated by 9 respondents.
- *Expert in specific technology* criterion was chosen by 5 participants.
- Two respondents identified other criteria for choosing participants in a business war-game.

Analysing the gathered empirical data, one of the most important criterion was persons knowledge in IP (11 responses), second criterion was person`s knowledge in a specific market and consumer perceptions (9 responses) and third criterion was business war-gaming participants` involvement in

protected technology development (8 responses). It can be seen that in general all the identified criteria share similar importance for respondents since the results were quiet close to one another.

Author concludes that most of these criteria are quiet relevant once assessing what kind of people should be invited to participate in business war-game in IP management. Also a slight difference from business war-gaming theory is that people knowledge is more important criterion than his or her personality or position in an organization. However other criterion mentioned by respondent was ones` ability to develop new ideas or particular technical improvements, whereas as this criteria to some extent can relate to a personality of a session participant.

5.2.3.1. SIZE OF TEAMS

A question was asked to respondents of the survey to indicate the amount of participants used during one business war-gaming session. The results are summarized in Figure 9 below.

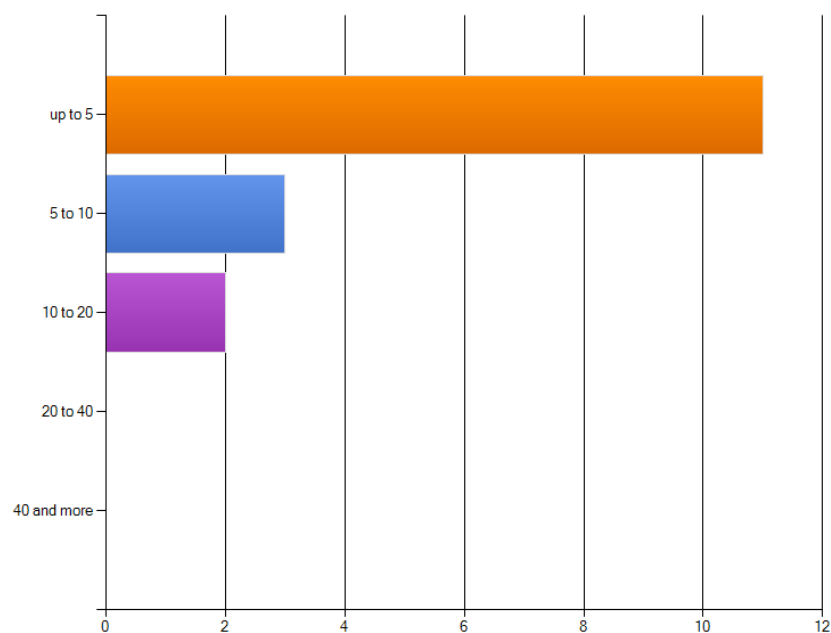


FIGURE 9: AMOUNT OF PARTICPANTS IN BUSINESS WAR-GAME IN IP MANAGMENT

Observing the results of the 16 respondents it can be seen that:

- 11 indicated that business war-games are ran with up to 5 participants;
- 3 responded that 5 to 10 persons participate in one session
- 2 respondents replied that from 10 to 20 people participate in their organized business war-games.

Analysing the empirical data showed that almost 70 % of respondents mainly create very small business war-games with up to 5 people in one session. These respondents represented industries such as pharmaceutical, food & beverage, biotechnology and aerospace.

A conclusion can be driven that in IP management much smaller amount of participants are used than suggested in business war-gaming theory. It can be assumed that this approach is less time, financial and human resource demanding and that sessions can be executed in small project teams or departments of an organization.

5.2.3.2. AMOUNT OF COMPETITOR PROFILES

The results of the question that related to the amount of competitor profiles assessed in one session are summarized in Figure 10 below.

The empirical data collected from 20 respondents show that:

- 11 participants of the survey assess 1 competitor profile;

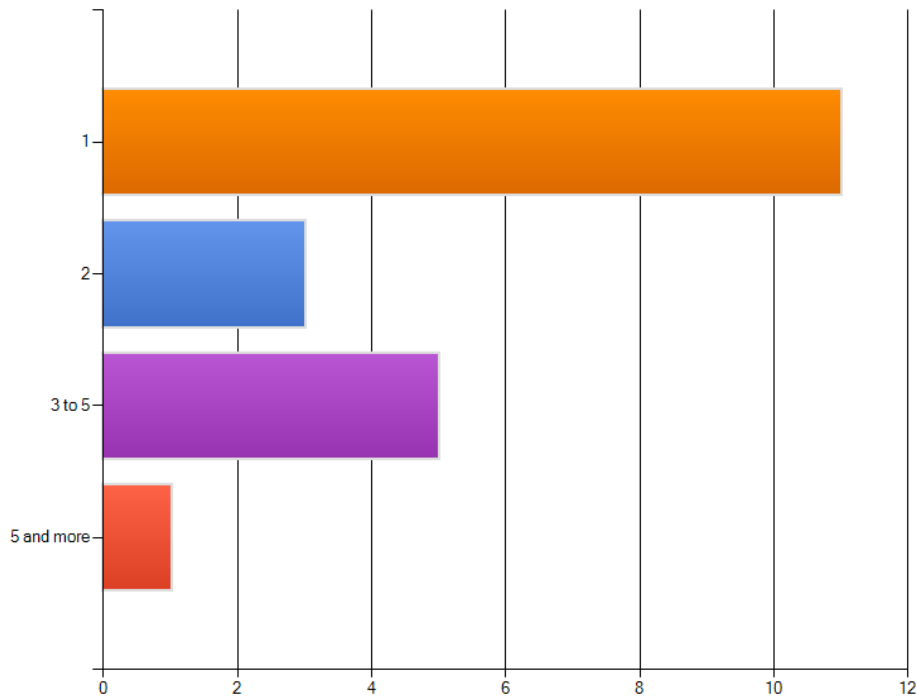


FIGURE 10: AMOUNT OF ASSESSED COMPETITORS IN BUSINESS WAR-GAME IN IP MANAGEMENT

- 3 respondents assess 2 competitor profiles;
- 5 IP professionals analyse from 2 to 5 competitor profiles;
- only 1 respondent assess 5 and more profiles during one business war-gaming session.

Analysing the data collected in relation to the amount of competitors assessed during one session more than half (55 %) responded that only one competitor profile was assessed. As can be seen the collected data shows different picture in relation to business war-gaming theory, i.e. assessing only one competitor during a session is more common in IP management.

It can be concluded that due to the fact that in IP management commonly small amount of participants are used in business war-gaming sessions it seems obvious that only one competitor profile can be assessed, indicating that the sessions are ran in small groups with limited time, financial and human resources.

5.2.4. COLLECTING INTELLIGENCE

In this part thesis author will describe and analyse the tools used to collect information about competitors and this information is managed in IP management, since competitive intelligence is regarded as one of the most important aspects in business war-gaming theory.

5.2.4.1. TOOLS USED TO COLLECT INFORMATION

Thesis author created an open-ended question that was asked to respondents to identify what are the three most commonly used tools to track competitor actions. Similar answers were clustered and are represented in the figure 11 below.

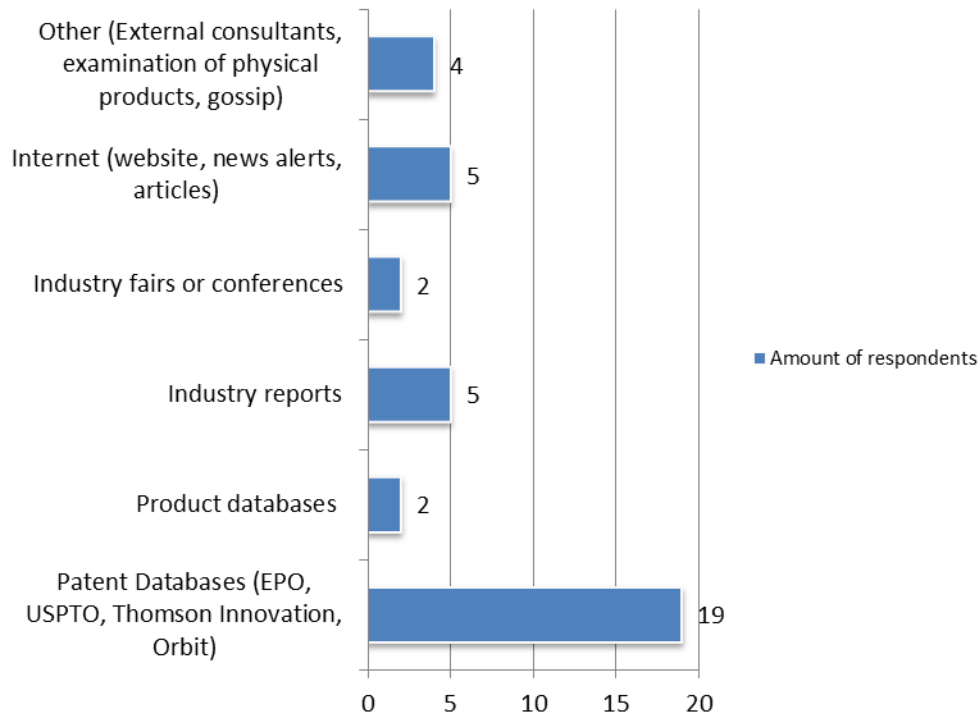


FIGURE 11: MAIN TOOLS USED TO TRACK COMPETITOR ACTIVITIES

Observing the gathered empirical data from 23 respondents it can be seen that:

- 19 of respondents are using patent database;
- 2 survey participants use product databases;
- 5 said that industry reports are used;
- 2 are gathering information from industry fairs or conferences;
- 5 said that internet (websites, news alerts, articles) are uses;
- 4 participants identified other solutions (examination of physical products, gossip, external consultants).

Analysing the data shows that most of the respondents are using patent or trademark databases to monitor their competitors, which seems to be quiet realistic, since databases are very efficient way to track competitor developments as well as strategic movements. Some respondents identified that they are using sophisticated tools like Thomson Innovation or Orbit database for patent searches. The second most important tools were industry reports and internet. Third respondents identified different tools such as gossip or examination of physical products. Other tools such as product databases, which can reveal information about competitor product portfolio, are used by only 2 IP professionals. It can be assumed that due to each industry specifics such databases might not exist or are not very sophisticated.

Author concludes that due to the specifics of IP professional work it is reasonable that patent database are most commonly used to collect information about competitors.

5.2.4.2. REGULARITY OF COLLECTING INFORMATION

In order to understand how regularly IP professionals monitor their competitors, author asked respondents to indicate whether it is done daily, weekly, monthly or in other time span. The results of the question are captured in the figure 12 below.

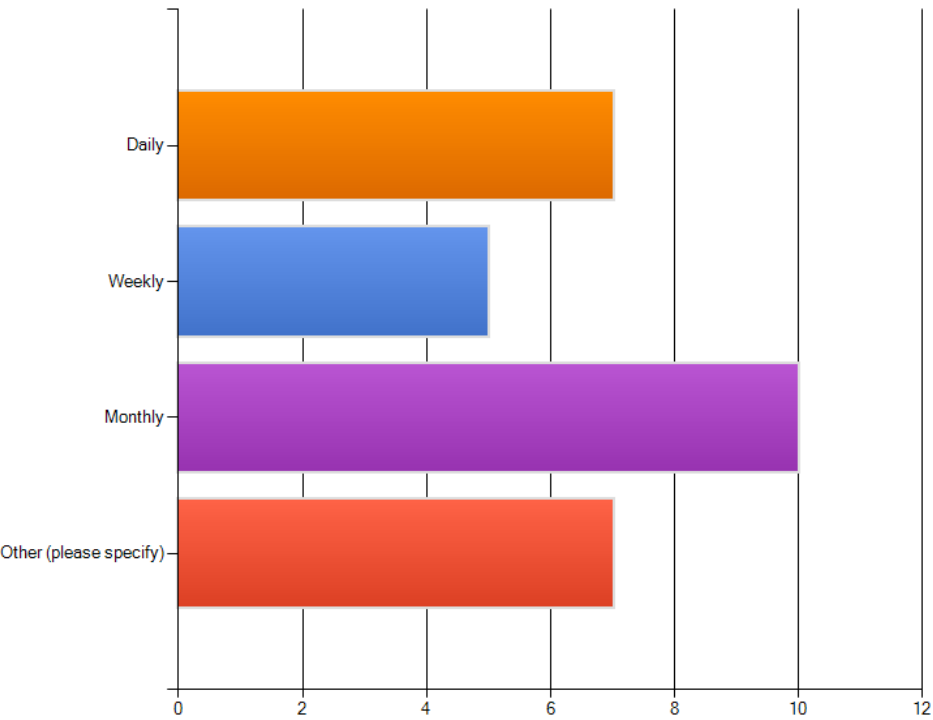


FIGURE 12: REGULARITY IN MONITORING COMPETITOR ACTIVITIES

It can be seen that out of 29 respondents:

- 10 are tracking competition monthly;
- 7 said it is done daily;
- 7 indicated other ways of tracking competitors;
- 5 said that it is done on weekly basis.

Analysing this data shows that such activity is quite disperse among respondents. The large part or 35 % of respondents monitor their competitors on a monthly basis. Others do not monitor their competitors regularly or mainly in a way that is not structured and is based on needs or a current situation. Organizations that track daily their competitors were mainly large corporations (more than 5000 employees) across different industries. Smaller organizations (up to 750 employees) were monitoring their competitors on a monthly and weekly basis.

Author concludes that there is a difference among IP managers in different size companies, which shows that larger corporations are more concerned about their position in the market as well as their competitor activities and also it can be assumed that they have much more resources than smaller

organizations. Different factors such company culture, top management attitude or knowledge can impact this process.

5.2.4.3. MANAGEMENT OF COLLECTED INFORMATION

Respondents of the survey, where asked to identify whether they are saving the information about their competitors in form that can be accessible for others. It is clear from the results above that information is collected and this will give a slight picture on how it is managed. Results are summarized in the Figure 13 below.

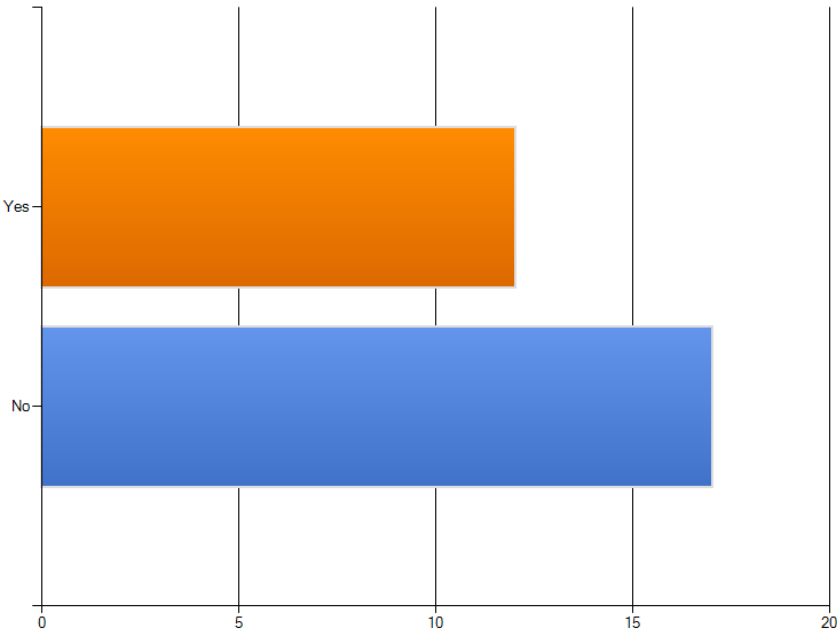


FIGURE 13: COMPETITOR PROFILES SAVED IN A FORM ACCESSIBLE TO OTHER STAKEHOLDERS

In total 29 persons responded to this question, where 17 responses were negative and 11 participants replied positively.

Analysing the data set only 40 % of IP professionals are creating competitor profiles and saving them in format accessible for other interested stakeholders. Author correlated the data to see differences between the size of the companies and their answer to this question. When looking at the organizations that answered negatively to this question it could be identified that those are rather small organizations up to 750 employees. When analysing positive answers to this question, different trend was observed. Most of the organizations were large corporations with more than 5000 employees.

Author concludes that due to their smaller size organizations cannot allocate resources (Human and financial) to execute such activity. Factor like company culture, top management knowledge, experience or management traditions can impact such activity.

5.2.5. ANALYTICAL TOOLS USED IN BUSINESS WAR-GAMES IN IP MANAGEMENT

The outcomes of analytical tools used in IP management are summarized in the Figure 14 below.

Observing the results in total 16 participants replied to this question:

- 7 respondents uses SWOT analysis;
- 2 said Porter`s 5 Forces;
- 4 are using technology trees;
- 1 is using supply chain analysis;
- 9 are using claim charts;
- 3 said that product life cycle analysis are used;
- 5 identified other tools such as patent landscapes, preference trees and critical product assessment.

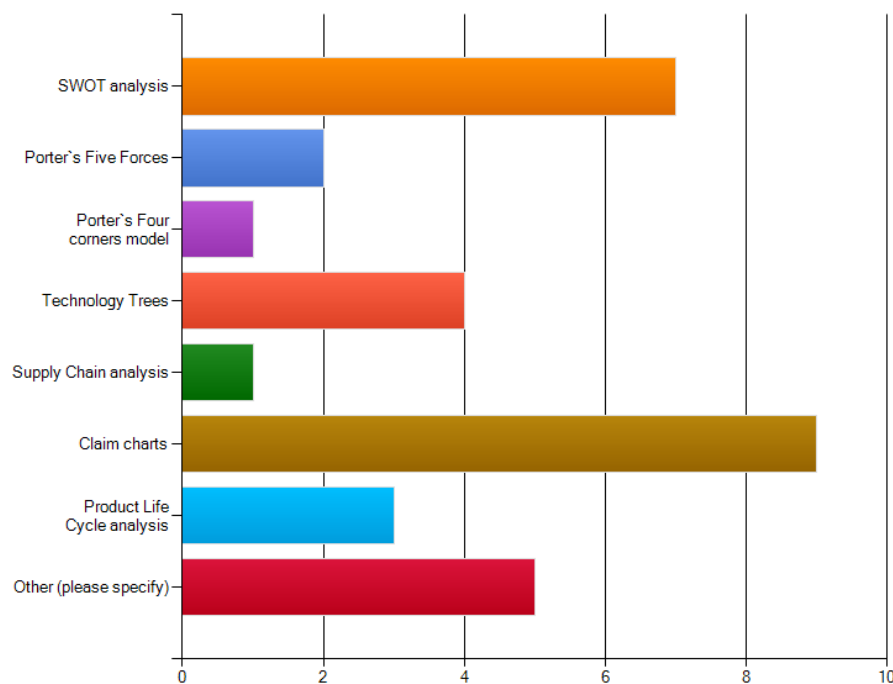


FIGURE 14: TWO MOST COMMONLY USED ANALYTICAL TOOLS IN IP MANAGEMENT

Analysing the results it can be seen that SWOT analysis and claim charts are the most commonly used tools to assess own company, competitor and specific patent(s). It can be assumed that these tools are used due to their ease of understanding to people with diverse experiences and backgrounds, as well as the ease of applicability for SWOT analysis to look either at own company or a competitor.

Author concludes that different analytical tools are used in IP management business war-games to support participants of session and give a structured approach. IP professionals also identified the use of quiet commonly known tools such as technology trees, patent landscaping, which allow understanding the environment in different fields of technology.

5.2.6. BENEFITS OF BUSINESS WAR-GAMING IN IP MANAGEMENT

Survey respondents were asked to indicate the three main benefits of a business war-gaming session. The results are summarized in the Figure 15 below.

Observing the data 13 participants responded to this question:

- Regarding *improvements to initial IP strategy* 10 respondents chose this option;
- In relation to *new product concepts* 4 respondents indicated this outcome

- 5 respondents identified *new product characteristics*;
- 3 respondents had outcomes in relation to *new products for R&D pipeline*;
- *new or additional IP* were identified by 9 respondents;
- *development of different protection scenarios* was identified by 7 survey participants;
- other outcome indicated by 1 respondent was formulation of courses of action for using IP to enhance competitive position.

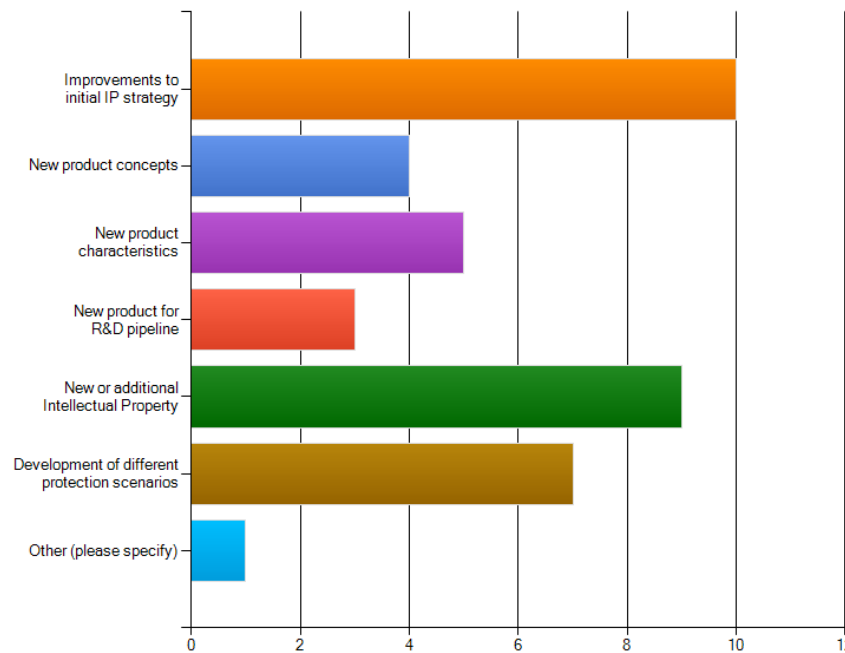


FIGURE 15: THREE MAIN BENEFITS OF BUSINESS WAR-GAME IN IP MANAGEMENT

Analysing the responses shows that the three most common outcomes, when IP protection strategy was challenged against competitor possible reaction or response, are improvements to initial IP strategy (10 responses), new or additional IP (9 responses) and development of different protection scenarios (7 responses).

Author concludes that in practice similar benefits as in theory, i.e. improvements to initial plan, identified weakness, opportunities or blind spots, can be identified. However it is clear that due to IP management environment the outcomes are more targeted were benefits such as improvements in initial IP protection strategy are identified by practitioners, but it is clear that these benefits fall under the scope of aspects identified in business war-gaming theory.

6. CONCLUSIONS

The aim of this chapter is to give main conclusion in regards to the master thesis. In this section the conclusions will be driven in relation to overall master thesis purpose and posed research question. To finalize this section recommendation for future research will be covered.

6.1. CONCLUSIONS OF MASTER THESIS OBJECTIVES

The overall purpose of this research was twofold. Firstly, it intended to investigate whether intellectual property functions in different industries are facing the management challenges that could be solved by business war-gaming. Secondly, it intended to look at practical use of business war-gaming in IP function across different industries.

The thesis author, firstly, intended to answer whether IP professionals across different industries are facing management challenges that can be solved by business war-gaming. The data and analysis showed that most of the 23 IP professionals, who represented different size organizations and industries, were able to relate to different cases, where business war-gaming can be used as an efficient tool. For 6 of the survey respondents all the identified cases were very relevant to their work as IP professionals and 4 of the represented pharmaceutical industry.

Although gathered empirical data of this study is not very large and might include errors, it allows concluding that business war-gaming can be used as a tool to help solve management challenges of IP professionals, since practitioners across different industries can relate to these situation.

The second research question intended to investigate how business war-gaming is practically used in IP management across different industries.

Empirical data and analysis showed that many respondents were able to provide practical insights on how the concept is applied in IP management. The data showed some details that were different from theory of business war-gaming, e.g. most of the practical sessions were executed in small teams and most commonly only one competitor profile was assessed by practitioners. Also more IP focused analytical tools such as claim charts were used to facilitate the sessions. Furthermore IP managers, who have practically applied business war-gaming, gained benefits that are claimed by the theory of business war-gaming (testing strategic plan in dynamic environment, understanding blind spots of identified plan, etc.), though some benefits were more focused on intellectual property and especially patents.

Thereafter thesis author concludes that business war-gaming is practically executed among IP professionals in industries, such as aerospace, food and beverage, pharmaceuticals, software, energy and others regardless to their size. Secondly, the practices is slightly different from the actual theory of business war-gaming.

6.2. RECOMMENDATIONS FOR FUTURE RESEARCH

Although this study does not assess very extensive data set, that would allow creating observation that could represent a more realistic view of application and practical use of business war-gaming in IP management. However as no similar studies have been identified this gives an initial insight of business war-gaming relation to IP management.

Author has identified several suggestions for future research. Since one of the cornerstones of business war-gaming is analytical tools, it could be interesting to analyse more in-depth what kind of specific tools are used in IP management. This kind of research could focus on understanding the practical side, developing best practice or trying to understand the cutting edge approaches in IP management. This study provides a good basis and proof that IP professionals have an understanding of business war-gaming application in their daily work.

Also author recommends combining all the different practices and theoretical frameworks to create a specific IP management tool designed in a way that would allow increasing quality of intellectual property management.

Other recommendation in relation to future research is to look at the differences between specific industries and compare the business war-gaming practices more in-depth. Also this study revealed that patents are in the focus of such sessions, it can be interesting to research how other IPRs are utilized in this kind of sessions and benefits it could bring, e.g. to trademarks.

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8. APPENDIX

OUTLINE AND QUESTIONS OF THE SURVEY

Introduction

The survey was created and is conducted by Martins Lasmanis, student at Master of Science in the Master Degree Program -Business Design at Chalmers University in Sweden. Currently he is writing his master thesis with the support and sponsorship of Nestlé.

Intended goal of this survey is to understand whether principles of business war-gaming can be applied in context of Intellectual Property management and contribute to identifying new practices for IP managers across different industries. Shortly, business war-gaming is a management tool that uses competitive intelligence to role-play competitors and identify weaknesses of a specific strategic plan as well as point out threats from competitor, identify new opportunities, foresights in a simulated environment.

The survey is fully anonymous, no individual answers will be shared and your confidentiality will be protected. The results of the survey will be publicly available in my master thesis; therefore all respondents who interested in results should provide their e-mail address at the end of the survey. The value of this survey is to identify the latest trends in IP management, as well as understand existing patterns in the industry.

The author thanks you for participating in this survey. Your opinion and feedback is important for data collection and finalization of thesis.

The following survey will take you to answer from 15 - 20 minutes

BUSINESS WAR-GAMING APPLICATION IN IP MANAGEMENT

Identifying whether IP professionals across different industries are facing management challenges that can be solved by business war-gaming.

1. Please rank the following parameters according to applicability to your work as IP manager
(1 is not applicable, 5 is very relevant)
 - a. Testing of IP protection strategy (Comparing competing or similar technologies, identifying setbacks and opportunities, etc.)
 - b. Understanding competitive environment
 - c. Assessment of risks to your company today
 - d. Identification of possible risks to your company in future
 - e. Understanding competitors` reaction to strategic moves
 - f. Simulating competitors reaction to a strategic move
 - g. Understanding market or technology gaps today
 - h. Identification of possible market or technology gaps in future

USE OF BUSINESS WAR-GAMING IN IP MANAGEMENT

Identifying situation and application area

2. Shortly point out three main criteria that are used for identifying which IP protection strategy should be used in business war-game?

Identifying competition

3. Which of the following criteria you normally use for identifying competitor? *(Please select one most relevant answer)*
 - a. Companies producing similar products
 - b. Companies producing identical products
 - c. Companies having technologies in same IPC class
 - d. Competitors producing substituting products
 - e. All of the above mentioned
 - f. Other (please specify)

Creating teams

4. What are the three main criteria used to identify participants for a business war-game in IP management? *(Please select 3 most relevant options)*
 - a. Involvement in protected technology development
 - b. Knowledge in Intellectual property
 - c. Knowledge or experience dealing with identified competitor
 - d. In-depth knowledge in industry covering whole value chain
 - e. Knowledge in market and consumer perceptions
 - f. Experts in specific technology
 - g. Other (please specify)
5. What is the amount of participants during a business war-game in IP management?
 - a. up to 5
 - b. 5 to 10
 - c. 10 to 20
 - d. 20 to 40
 - e. 40 and more
6. How many competitor profiles are role-played during a business war-game in IP management?
 - a. 1
 - b. 1 to 2
 - c. 3 to 5
 - d. 5 and more

Collecting intelligence

7. Point out 4 main tools (e.g. patent databases, product databases, industry reports) that are used to monitor competitor activities?

8. How often are you monitoring your competitor activities in your company?
 - a. Daily
 - b. Weekly
 - c. Monthly
 - d. Other (please specify)

9. Have competitor profiles been identified and saved in a database or stored in other form accessible to relevant stakeholders?
 - a. Yes
 - b. No

Analytical tools used in business war-games in IP management

10. What analytical tools are you using - to assess competitive environment for IP protection strategy challenge against competitors predicted response or reaction? *(Please select 2 most relevant tools)*
 - a. SWOT analysis
 - b. Porter`s Five Forces
 - c. Porter`s Four corners model
 - d. Technology Trees
 - e. Supply Chain analysis
 - f. Claim charts
 - g. Product Life Cycle analysis
 - h. Other (please specify)

Benefits of business war-gaming in IP management

11. What were the three main outcomes when IP protection strategy was challenged against competitors predicted response or reaction? *(Please click 3 most relevant options)*
 - a. Improvements to initial IP strategy
 - b. New product concepts
 - c. New product characteristics
 - d. New product for R&D pipeline
 - e. New or additional Intellectual Property
 - f. Development of different protection scenarios
 - g. Other (please specify)

Identifying demographics of respondent

1. In what industry you are working as IP manager?
 - Aerospace
 - Airlines
 - Automotive
 - Banks
 - Biotechnology
 - Computers & Electronics

- Energy
 - Food & Beverage
 - Internet
 - Media
 - Metals
 - Pharmaceuticals
 - Retail
 - Software
 - Telecom
 - Other (please specify)
2. What is the size of your company?
- 500 to 749 employees
 - 750 to 999 employees
 - 1,000 to 1,499 employees
 - 1,500 to 1,999 employees
 - 2,000 to 2,499 employees
 - 2,500 to 4,999 employees
 - 5,000 employees or more
3. What is your position in your company?
- Chief Intellectual Property Officer
 - Intellectual Property Manager
 - Legal Counsel
 - Patent Attorney
 - Other (please specify)
4. If you would like to receive a copy of the results, please provide your email address.