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Editor
James Ogunleye



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**Research Papers on
Knowledge, Innovation
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Editor

James Ogunleye

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PREFACE

Still strengthening the links in the knowledge, Innovation and Enterprise Chain

The Organising Team of the International Conference on Knowledge, Innovation and Enterprise is enormously delighted to publish this book—*Short Research Papers on Knowledge, Innovation and Enterprise*—as part of the 2014 KIE Conference Book Series. It is also a real privilege for us to have a wide range of subject specialists to contribute to this book.

Knowledge, Innovation and Enterprise are significant themes of the KIE conference—innovation sits at the heart of what the KIE conference is all about. Innovation in this context is broadly defined. I have—along with a colleague from IBM—conceptualised innovation in a seminal work as a by-product of creativity (see Ogunleye and Tankeh, 2006; Tankeh and Ogunleye, 2007). At the heart of innovation is knowledge. But knowledge on its own will not produce a desired result: it requires our abilities to apply that knowledge in a variety of contexts—both to familiar and unfamiliar situations—in a way that creates or adds value (see also Ogunleye, 2001). Creating or adding value to a product or service or taking the outcome of innovation to the marketplace is an art of enterprise—something that is relished by every entrepreneur. So our mission at the KIE Conference is to provide a platform for stakeholders in the fields to join hands with us to strengthen the knowledge, innovation and enterprise chain.

Finally, I'm grateful to all the authors in creating time from their very busy schedules to contribute to this book. Thank you.

James Ogunleye, PhD, FRSA
Chairman, 2014 KIE Conference

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1 DERYN GRAHAM

THE RELATIONSHIP BETWEEN HEURISTIC, CAUSAL AND STATISTICAL MODELS OF KNOWLEDGE AND BIG DATA

ABSTRACT This paper focuses on knowledge and describes the relationship between heuristic, causal and statistical models of knowledge and their association with Big Data. These models can be differentiated by the mode of generation; namely the approach used to acquire the knowledge (knowledge acquisition). Causal reasoning, or reasoning from first principles, often uses simulation to obtain the entire set of causes and effects for a complex structure leading to a hierarchy of descriptions. Knowledge-based reasoning tries to emulate the knowledge and experience that an expert applies in diagnostics (the heuristics) through knowledge elicitation techniques such as interviews. Straddling causal and heuristic models of knowledge is the statistical view. This paper depicts the relationships between these models and discusses where Big Data fits in.

Keywords: Knowledge, Causal Reasoning, Heuristics, Statistics, Big Data.

Introduction

Heuristic, Causal and Statistical models of knowledge and Big Data can be differentiated by the mode of generation; namely the approach used to acquire the knowledge (knowledge acquisition). Causal reasoning, or reasoning from first principles, often uses simulation to obtain the entire set of causes and effects for a complex structure leading to a hierarchy of descriptions. Knowledge-based reasoning tries to emulate the knowledge and experience that an expert applies in diagnostics (the heuristics) through knowledge elicitation techniques such as interviews. Straddling causal and heuristic models of knowledge is the statistical view, where statistical data is usually collected (acquired) from multiple sources such as databases and questionnaires, with further statistics generated by the application of mathematical formulae to produce purely numeric (quantitative) values. This paper focuses on knowledge and describes the relationship between heuristic, causal and statistical models of knowledge and their association with Big Data. The paper depicts the relationship between these models and discusses where Big Data fits in.

Models of knowledge

Heuristic, Causal, Statistical and Big Data models can be differentiated by their origin or mode of generation, their quantitative or qualitative characteristics, “format”, whether or not domain specific, and their main affinity with data, information or knowledge.

Knowledge acquisition for causal reasoning, or reasoning from first principles, often uses simulation to obtain the entire set of causes and effects for a complex structure leading to a hierarchy of descriptions. An example of the use of causal reasoning is Automatic Test Equipment (ATE) for computer hardware fault diagnosis (Graham, 1990). Knowledge is therefore described as a hierarchy of descriptions (behaviours) linking cause (faults) and effect (symptoms). Causal reasoning models are domain specific and numeric data hierarchies.

Knowledge-based reasoning tries to emulate the knowledge and experience that an expert applies in diagnostics (the heuristics) through knowledge elicitation techniques such as interviews, acquiring both qualitative and quantitative values. Knowledge is often expressed in the form of rules. Backwards or forwards chaining through these rules should lead to one or more solution candidates.

Expert or knowledge-based systems separate the domain expertise and knowledge (knowledge-base) from the mechanism (a forward or backward chaining inference engine). “Knowledge-based systems provided clear and logical explanations of their reasoning, use a control structure appropriate to the specific problem domain, and identify criteria to reliably evaluate its performance” (Luger, 2002: 20-21).

These systems require the acquisition of knowledge and expertise, and are more akin to a human expert in a specific domain. They are rule based, applying propositional logic or predicate calculus to reach conclusions based on evidence (attributes of human experts). They enable multiple conclusions with associated degrees of statistical confidence (confidence factors), as well as “How” and “Why” queries. Expert Systems have difficulty in capturing “deep knowledge” and are not truly intelligent, but such systems attempt to encapsulate knowledge and expertise. Straddling causal and heuristic models of knowledge is the statistical view where data can originate from multiple sources and there is no single knowledge acquisition approach. In addition, statistical information is the result of the application of mathematical formulae. Most statistics are domain specific and take the form of statistical data or information (when analysed). Statistics may aid the identification of knowledge by statistical weighting (such as confidence factors) or search. The model is purely numeric and quantitative, and statistical data is usually collected (acquired) from multiple sources such as databases and questionnaires, with further statistics generated by the application of mathematical formulae.

Causal, heuristic and statistical models are likely to be domain specific because of the Combinatorial Explosion (described later).

Characteristics of models of Data, information and knowledge

Graham (2013) depicted the “transformations” from data to information and then from information to knowledge, discriminating between data, information and knowledge through the dimension of time for the purpose of learning (competence achievement).

Humans do appear to take in raw data with a specific goal, to organise the data so that it has meaning, and to analyse this information (compare and contrast, etc elements of Bloom’s (1956) taxonomy) to a more structured form, namely knowledge. This knowledge or expertise is the basis of knowledge-based systems and heuristic knowledge models.

Causal, statistical and heuristic models have been differentiated by their main affinities to data, information and knowledge, respectively, in Figure 1 below.

Model Domain	Mode of Origin	Characteristics	Format	Main Association	Main Specific
Causal	Simulation	Quantitative	Numeric	Data	Yes
Statistical	Data Collection/ Quantitative Methods	Quantitative	Numeric	Information	Yes
Heuristic	Knowledge Acquisition/ Elicitation	Quantitative & Qualitative	Strings: Facts, Rules, Meta Rules	Knowledge	Yes
Big Data	All/Ad hoc	All	All/Any	All	Yes/No

Figure 1: Characteristics of Causal, Statistical, Heuristic and Big Data Models of Data, Information and Knowledge

Pros and cons of models of domain knowledge

Causal, knowledge-based reasoning and statistical models have their advantages and disadvantages. The main advantage of causal reasoning is that it is definitive; causes and effects (states and their pathways) can be clearly defined. The main weakness of causal reasoning is scalability; scaling-up from simple (small) to complex (large) problem domains is not easily achieved. The state-space is large for even the sim-

plest of problem domains and can suffer from the Combinational Explosion. The State Space is the space of allowed problem states.

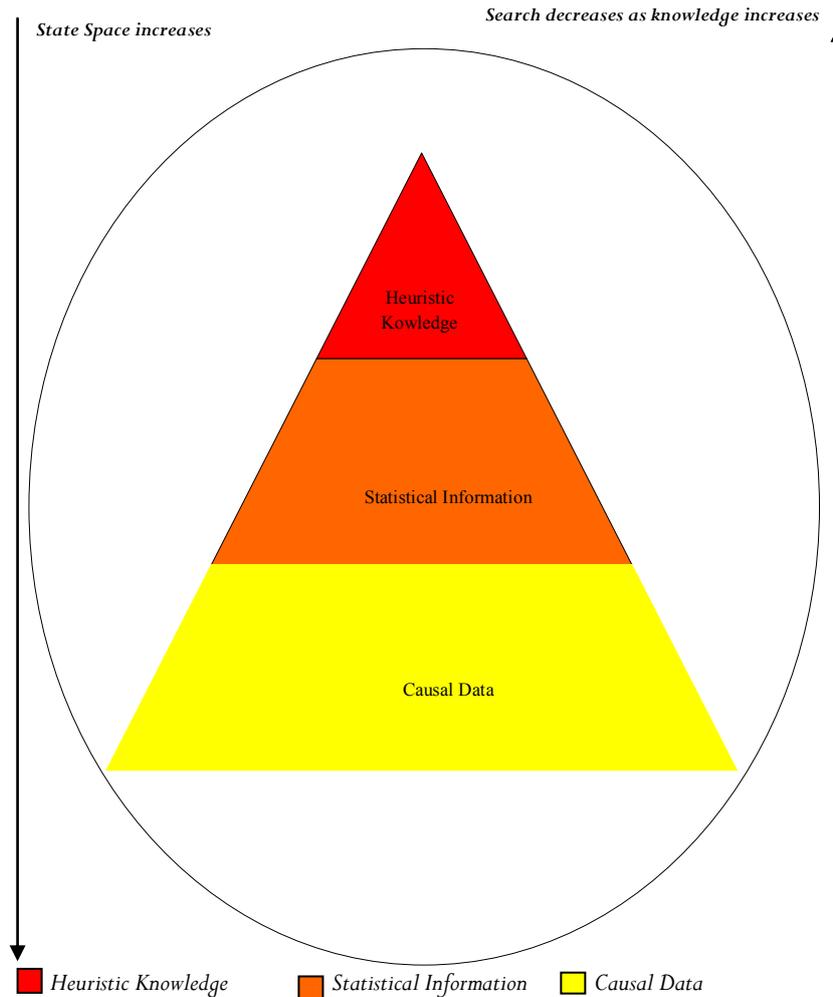


Figure 2: Models of Knowledge within a State Space Pyramid for a Problem Domain

State Space may take the form of a tree, or (when it is possible to return to a previously visited state), a graph. In all but trivial cases, it is not possible to explore State Space fully (i.e. until every path reaches a goal state or a dead end). If the

branching factor (the number of successors to a given state) is b and the tree is explored to a depth N , there will b^N nodes at the N th level. The classical example is a Chess Board. The Causal Model would consider every possible outcome from every possible combination of moves, i.e. the entire State Space.

The heuristic approach applies “rules of thumb”, such as set pieces in Chess, using knowledge to guide the search (of the state-space). Knowledge-based reasoning has the opposite issues to causal reasoning; its heuristic approach effectively contracts the State Space, but the heuristics may not be as well defined.

The statistical outlook covers both causal and heuristic models. The heuristics are also likely to map against probabilities (of decision and goal outcomes) which would be experientially realised by human experts, i.e. guide search. The main advantage of the statistical model is its simplicity; purely numeric and quantitative, it is usually combined with other models to provide information (to guide search and contract the State Space), for example in knowledge bases where statistical probabilities are employed to provide confidence factors (the measurement of confidence or belief in a given solution).

Causal reasoning is strongly associated with quantitative data whilst knowledge-based reasoning has a greater affinity with qualitative (heuristic) “data”. This is reflected by the fact that causal reasoning applications are often automated (such as ATE) analysing numeric data. Knowledge-based reasoning involves knowledge acquisition and some elicitation of rules from human experts using qualitative methods such as interviews.

Looking at fault diagnosis, the complete causal model for a system or device would possess all possible faults (causes) for all possible symptoms (effects), i.e. the entire state-space for a given hardware device domain. Both the heuristic and statistical models can be mapped onto the causal model. It is suggested that the relationship between the heuristic and statistical models may be a close one, with both the heuristic and statistical models homing in on the most common faults, as might be experienced by human experts and is therefore experientially based. In the statistical model, this would be related to the frequencies of faults in terms of probabilities, whereas in the heuristic model, this might equate to experience. The heuristic model can therefore be skewed by extraneous cases when the experience gained is not a true indication of the actual fault frequency.

Searching the State Space to identify faults in Figure 2 advocates a heuristic approach first because of its reduced state-space, before considering the use of the statistical, and, if all else fails, causal reasoning (or reasoning from first principles) being employed to identify faults and solutions. The divisions between models are likely to be fuzzy and, unlike the depiction in Figure 2 above, indistinct.

The data in Figure 3 could be data held in a database, i.e. a conventional source acquired by conventional knowledge acquisition means, and is domain specific. The quantitative data would tally with statistical data. The data could be converted

into statistical information through the application of statistical formulae, possibly via an Information System. The accrued data in a data warehouse could be converted into knowledge through techniques such as data-mining, pattern recognition and machine learning. Knowledge-based systems are often front-ends to data warehouses and databases.

Life Insurance Example

Data: Mr. (male) John Smith died in London, England on the 1st February 2003, aged 74 years.
123456SMITHJOHNMLONDONENGLAND0102200374
 Mr. (male) Peter Brown died in Stafford, England on the 23rd September 2003, aged 69 years.
789101BROWNPETERMSTAFFORDENGLAND2309200369
 Etc.....

Information: The average life expectancy of men in England in 2003 was 73 years.
Knowledge: The predicted life expectancy of men in England in 2013 is 80 years.

Figure 3: Data, information and knowledge: Life Insurance Example (Extended from Graham 2013, p.176).

The actual alphanumeric data strings are given below the more readable description of the data beginning with six digit identifiers. Age is given as an attribute, but could be calculated if the Date Of Birth (DOB) is known. The causal model would encompass all the data (states) for all criteria; there is no contraction or reduction of the state-space. Figure 4 (Extended from Graham, 2014) adds a temporal dimension. As shown in the Life Insurance Example (Figure 3), data is absolute and with a value independent of time. This is not true of information; information must be timely if it is to be informative and of value, and usually deals with the now (present). It is suggested that knowledge synthesis, on the other hand, can take place at any point in time post the processing of information, relying on past, historical information (recent or otherwise) to enable future predictions. For example, the employment of data mining: historical (past) data and information is mined to make (future) predictions and hypotheses. Although knowledge is employed in the present, the creation of new knowledge is perhaps associated more with the past (events) and the future (predictions).

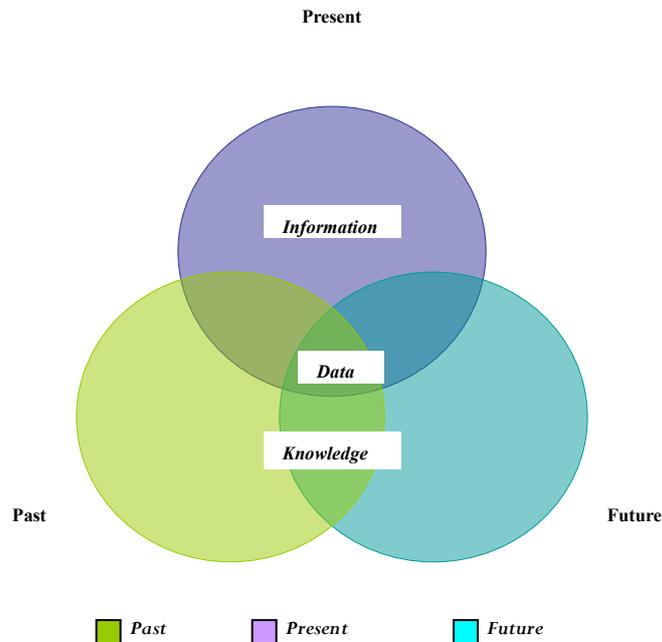


Figure 4: Temporal View of Data, Information, Knowledge (Venn diagram) and Big Data

Causal models are likely to be temporally independent data hierarchies. Statistical models generate information and are of the “now” (present). Knowledge-based models fit more with the future predictions based upon past (historic) events. Figure 4 suggests the temporal relationships between data, information and knowledge. Big Data is omnipresent and is therefore not shown in Figure 4. The suggested steps involved are the presentation of external data (facts) and their organisation into information and subsequent analysis to knowledge.

Discussion and Conclusions

McKinsey Global Institute (Neaga and Hao, 2013) suggested models for Big Data Characteristics based on the source, with the main key characteristics being those of volume, variety, value and veracity. Attributes for each modelled characteristic (Neaga and Hao, 2013: 36):

“Volume: Data at Rest—Terabytes to exabytes of existing data to process.

Velocity: Data in Motion—Streaming data, milliseconds to seconds to respond.

Variety: Data in Many Forms—Structured, unstructured, text, multimedia”.

An additional characteristic is Veracity:

“Veracity: Data in Doubt—Uncertainty due to data inconsistency and incompleteness, ambiguities, latency, deception, model approximation”.

These characteristics have an implicit temporal element (data at rest, for example) and associated definitions of data, information and knowledge, and relationships with heuristic, causal and statistical models (e.g. structured, unstructured, etc.).

So where does Big Data fit? The term “Big Data” is all encompassing as it fits anywhere and everywhere within the domain specific state-space pyramid (Figure 2) and, more importantly, outside. The distinguishing feature of Big Data is its method of collection, often more ad hoc than by design. Much of the knowledge embodied within causal reasoning, heuristic reasoning and statistical models is methodically sought. Big Data is often a bi-product of other things; data stored in public and private clouds or gleaned through social media interactions. Big Data originates from multiple sources; as sensor data, from social media, as well as conventional databases etc, etc. Big Data that is outside the domain specific state-space pyramid is not data specific to a given domain nor, as data, is it temporally specific as indicated by Figure 4 above and supported by McKinsey’s model, it exists in the past, the present and the future. It is the filtering and processing through machine learning/statistical analysis and domain application that may convert Big Data into Big Knowledge. It is questionable if Big Information exists because of domain specifics combined with temporal relevance.

Big Data includes specific domain information and knowledge “reformed” as data. For example, knowledge and information associated with life insurance (Figure 3) could be “reformed” as Big Data looking at how many people both are born and die in England.

Big Data is everywhere and “everywhen” because everything (data, information and knowledge) begins with data and data is temporally independent.

Curran (Summer 2013) argued that “data centres will be the engine rooms driving the ‘Fourth Industrial Revolution’, which will see the internet of things and big data transform the way modern businesses operate and societies function” (p. 16).

There is a temptation to use Big Data simply because it is there. A significant proportion of Big Data is likely to be spurious to any specific application or domain. One domain source of Big Data has apparently been utilised successfully for another unrelated domain; the use of an earthquake aftershocks mathematical prediction model applied to crime prediction in Los Angeles (MIT, 2013)—could this be the identification of a natural generic pattern for seemingly disparate phenomena? This question requires further research.

This paper has looked at models of knowledge (causal, heuristic and statistical) which have been evaluated in terms of their origins and existence within the state-space, and the acquisition and synthesis of data to information and knowledge in a temporal context. This has led to the identification of Big Data, its derivation and position within the state-space and within the context of time.

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2 GAVIN SUSS

THE “INNOVATION THROUGH EDUCATION” (ITE) PROGRAM: TEACHING AND ENCOURAGING INNOVATION FOR MIDDLE MANAGEMENT

ABSTRACT Every organization grows and develops according to a natural lifecycle, facing predictable problems at each stage along the way. The lifecycle of organizations has demonstrated that those that have not changed, developed, and understood the dramatic developments in the open market failed and, in some cases, even disappeared. This paper suggests a model of how to educate employees to be innovative and creative. Based on the e-Vision program conducted in the Keter Group (www.keter.com), it has been demonstrated that employees in the right context and setting can change, renew themselves, and eventually create value and promote innovation in the companies where they work. Unlike traditional innovation programs, the difference here is rooted in the idea of how *to educate innovation agents* that will lead a culture of change and innovation. Innovation cannot be delegated down the organization, it requires a strategy and education.

Keywords: Innovation, creativity, education, training, ITE program

Introduction

In his 2013 publication “Ninja Innovation” Shapiro talks about the ten killer strategies of the world’s most successful businesses, and “If you don’t innovate you die” is one of them!. Today, the goal of all organizations is to recognize the patterns of change that can affect their core business, and then to be creative and innovative to meet future threats and opportunities. Innovation Through Education (ITE) is about change, but change is not simple, and resistance to change is a well-known phenomenon. Such resistance is explained as part of the pain, anxiety, and ambivalence that employees experience, along with the insecurity emanating from any program of com-

prehensive change (Suss, 2013). It is often claimed that it is the middle managers who appear to hold back innovation in an organization. This may be the case, as middle managers are focused on the delivery of short-term results even more they are increasingly cynical and distant from their organizations. They are confused about their future and how to manage their careers. This comes at a time when the value of middle management is much greater than ever before (Osterman, 2009). The requirements of their roles, therefore, reduce their ability to engage in innovative and creative thinking. Because of the middle managers' primary obsession with constantly chasing efficiencies, there is little "slack" for innovation and new learning. The measurement of their performance is often based on this emphasis on efficiency and effectiveness, and not on generating innovation. We argue that it is this level of middle managers, which is a fundamental part of every company, that should be educated and taught how think "out of the box," and to understand the world of innovation.

Companies such as Procter & Gamble (P&G), General Electric (GE), Whirlpool, 3M, Google, Apple, and others have created organizations that are based on innovation. Some of these companies had previously been considered traditional and conservative, but by making a decision to change and engage in innovation they developed unique value, new products and services, improved operations, and became innovative and creative. For example, Whirlpool—under the leadership of Dave Whitman—set out in 1999 to define the company's global innovation strategy. Whitman has been widely quoted as saying "Innovation for everyone and everywhere," but, more importantly, what did he do? Among many actions, he did the following (Skarzynski and Gibson, 2008).

- The introduction of a company-wide training program aimed at developing and distributing the mind-set and skills of innovation
- The creation of "innovation boards" in the units that reviewed ideas and new projects, and allocated resources
- "Innovation days," where teams showed and presented ideas
- The creation of large, cross functional "innovation teams."

The results were outstanding and Whirlpool transformed from a conservative organization to an innovative organization. Action related to training, commitment, open thinking, and teamwork delivered excellent results.

Whirlpool is living proof that it is possible to become innovative and achieve the benefits of doing so.

The ITE program we are presenting in this paper is inspired by the actions taken within Whirlpool, and other outstanding firms. It is based on a program named e-Vision¹ focused on the middle level managers, that was developed within the Keter Group, and aimed to educate the next generation of middle level engineers to become innovative. Engineers play a critical role in driving the global economy. “The industry needs highly educated, corporate engineers to ensure innovation and technological leadership. The industry also needs engineers who strive for the best in a high-performance, and highly competitive global market. In particular, there is a very strong need in modern industry for a new breed of engineer: technically broad, commercially savvy, able to work and cooperate in multi-discipline teams (with designers), and globally adept” (pp101) (Suss, 2010). The results of the e-Vision program were extraordinary.

The seven points to achieve excellent innovation through education among middle level managers

In a changing world, human capital has become of even more cardinal importance, and there is a growing recognition that more and more of the market value of firms rests on their human capital (Lawler and Worley, 2006). Therefore, investing in human capital will have a dramatic return to the investor/organization (Suss, 2010). For most people, the process of growing older and developing knowledge and specialist expertise has both positive and negative dimensions. It may be a blessing, because with experience comes the ability to quickly grasp the complexity of our surroundings,

sensing and trimming the nonsensical ideas. Yet, it may also be a curse, because age and experience can also lead to the piling up of constraints/structures and filters that hinder innovation, why is the case? Because people as they grow older tend to be affixed and exhausted. When this happens, creative ideas may be rejected at an early stage because they do not strictly abide by logical rules, and instead are set aside in favor of non-innovative ideas or solutions, whose value is that they conform to the mold that needs to be escaped. It is important for this closed mind-set, which stifles innovation, to be changed within a company’s human capital.

1. (<http://www.d-vision.co.il/groups/e-vision>)

To make innovation truly happen, people throughout the company need to understand that it is not just a corporate initiative, or a one-time project, or an activity for a particular group of people. They need to grasp the fact that for innovation to really work, and to be sustainable, it has to become a systemic and widely-distributed (Skarzynski & Gibson, 2008). Kelly and Littman (2005) in their book “The Ten Faces of Innovation” wrote “At IDEO, we believe that innovators focus on the verbs. They’re proactive. They’re energetic. Innovators set out to create, to experiment, to inspire, to build on new ideas” (pp. 6). Successful businesses build fresh innovation strategies into the fabric of their operations (Kelly & Littman, 2005); they do so all year as they understand the fundamental part of innovation and creativity in the process of success. In an increasing competitive and complicated market, innovation is an opportunity organizations cannot afford to neglect. The second component is Creativity. Creativity is the process of generating *ideas* whilst seeing innovation as the sifting, refining and more critically—the implementation of those ideas. Creativity is about divergent thinking. Innovation is about convergent thinking. Creativity is about the generation of ideas and innovation is about putting them into action (Gurteen, 1998).

The ITE and the following 7 points can navigate organizations to success using methods, tools and mythologies of innovation and creativity.

1. Leadership: Who is the Boss?
2. Innovative and Creative Workshops
3. Hands on Experience with Excellent Mentors
4. Enrichment Courses (e.g., art, design, music, drama, and more)
5. Round Table Sessions
6. Professional and International Tours
7. Teamwork.

Leadership: Who is the Boss?

Building a self-sustaining, “all-the-time, everywhere” capability for innovation is fundamentally a leadership challenge (Skarzynski & Gibson, 2008). Change is a difficult process, and educating managers to change and learn innovation is even more difficult. So the first point is to ask the question: “Who is the boss?” Namely, who leads the program, and who sets an example to the managers during the process? Studies have shown that 20–67% of

the variance on measures of the climate for creativity in organizations is directly attributable to leadership behavior (Hooijberg et al, 2010). What this means is that leaders must act in ways that promote and support organizational innovation. A leader's behavior is a powerful display of mannerisms that convey the expectations and values of the organization, and together these set the tone for the organizational climate (Grojean et al., 2004). It is crucial to find the right leader who must dedicate time to the process, and she or he must be an example to all the participating managers. This requires time, energy, and an open mind.

Innovative and Creative Workshops

For today's organizations to succeed, businesspeople also must become masters of innovation (Shapiro, 2013). Such a process requires developing a culture of innovation, where others throughout the organization apply innovative thinking to solve problems and develop new products and services, requires intense and customized workshops. Therefore, in every process of educating towards innovation, the tools and content must be taught that enrich and prepare the managers with the best knowledge. As the objective is to educate managers to be creative and innovative, the recommended workshops should be based on the following areas (Blue Ocean Strategy, Scamper, Brainstorming, Cause and Effect Diagram, Reverse Innovation, Case Studies, and more). Creativity is essential to success in any discipline or industry (Kelly and Kelly, 2012), from startups such as Facebook and Google to stalwarts such as P&G and GE. It is creativity and innovation that has enabled these companies to rise and succeed. This is the foundation of the ITE program, namely teaching, training, and educating managers. The basic idea of expecting employees, at any level, to adapt new and creative tools or skills without training is ludicrous. Learning is probably the most important part of this program, because when people learn they acquire new skills, habits, and behaviors. They can develop reflective thinking and strengthen memories (Feser, 2012).

Hands on Experience with Excellent Mentors

Hands-on experience is very important, and should be an integral part of the process. Managers (along with the tools they learn) should be involved

in real time projects, enabling them to execute the knowledge they have learned and translate the tools into practice. It is important that this should be done under the supervision of excellent mentors. The presence of a mentor is important for feedback and improvement. We found in the e-Vision program that the interaction of learning and working is the best formula to practice innovation successfully.

Enrichment Courses (e.g., art, design, music, drama, and more)

This point may seem to be the “crazy” part of the program, but it is the spiritual part. There is a very powerful objective in the teaching of the selected managers courses in areas such as art, design, music, and drama. Such courses expose the managers to spirit, passion, philosophy, romance, aesthetics, and more—this is the unique part of the training program. Julie Cameron wrote, in her book *The Artist's Way*, “the central experience of creativity is mystical, opening our souls to what must be made, we meet our Maker.” It is rare to find business firms that commit their revenue and dividends for “indulging” in areas of spirit and art. However, this is exactly what is required to promote creative thinking and the breaking out of borders. Such a process can help managers discover and recover creativity.

Round Table Sessions

Round table sessions allow extended discussions among a small group. Round tables are excellent venues for giving and receiving targeted feedback, engaging in in-depth discussions, and meeting colleagues with similar interests. This part has two objectives. The first is to expose the managers to the executives of the organization and to conduct open discussions about the company and its problems, challenges, and targets. The program has to be aligned with the leading managers and the future plans of the company. These sessions enable a good quality of interaction and open a new level of communication between all sides. The second objective is to engage in a brainstorming process, bringing up as many ideas as possible, driving the managers to be inquisitive, solve problems, and practice seeing things differently. Meetings with the executives of the company several times a year, and exposing the managers to the leaders and their vision of the company

have a great value and creates high motivation among the managers in the program.

Professional and International Tours

Due to the fact that many university faculties teach the same knowledge through the same techniques, the results will often be very similar. That is, they produce good engineers, good managers, or good designers. But what about outstanding engineers and managers who think differently and engage in problem solving using new methods and tools? To achieve this, a wider level of understanding is required, and managers need to learn new methods of management, production, development, and quality from their competitors. Even more importantly, they need to learn this from other industries. To do so they need to visit the sites, talk to the managers and employees, and visually watch and learn. This part is important as it includes local and international tours, learning from different cultures, new languages, and new and different methods of management and decision making. This will lead to collaboration with excellent organizations, networking, and a process of learning from others.

Teamwork

People in innovative organizations communicate well, are open to each other's ideas, and support each other in shared work, likewise teamwork has proven to be an excellent predictor for success (Guimera et al, 2005). Wooley et al, (2010) described in their research variables that predict teamwork success for example, they examined: talking, face expressions, tone of voice, volume, and the distance between participants. In their research all groups were divided randomly, all participants were from diverse backgrounds, and the groups were given missions and projects that required creativity, decision making, and problem solving. Surprisingly, they found that the following four points predicted the success of the teams:

- *Social sensitivity (empathy)*: listening to each other without interrupting, along with showing sensitivity to the face and body language
- *Equality*: giving each participant an equal amount of time to talk (and not having one single dominant leader)

- *Presence of women*: the more women there were in a group the more social intelligence improved, together with the group's result
- *"The mix of the group"*: a combination of young and senior participants was significantly better than a homogenous group of senior and experienced employee

The process of creating innovation is difficult and challenging. An individual on their own cannot succeed, and therefore teamwork is essential for the success of the process. Building the right teams and enabling them to work in harmony, can be a very important factor in the process of educating towards innovation. Senge (1994) finds that "teams, not individuals, are the fundamental learning unit in modern organizations," which confirms recent research. Building the best high potential teams is a difficult but important mission; if teams are selected merely because they are available, rather than for their capabilities, then the project/process will be at great risk (Wilson and Doz, 2012).

Conclusion

The capacity to innovate is a very important function of a business' commitments, what it seeks to accomplish, and its relationship with what it understands as its circumstances. The same is also true on the level of individuals and companies. Likewise, time and budgets are necessary for an organization to achieve a fulfilling and serious process. Many organizations have taken the need to be innovative very seriously. This began 20 years ago and has accelerated in the past decade. Companies such as Google, Apple, Samsung, eBay, 3M, and many others have proven that to be a market leader it is essential that innovation is part of the organization's DNA. According to Skarzynski and Gibson (2008), there are two kinds of companies: either companies, like Google and Apple, that emerged as innovative and creative in the first place, with a strong mythology and culture of fostering and promoting innovation, or companies like Whirlpool and Cemex (a world leading Mexican firm of building materials), that were better in execution than generating innovation. These firms, like others, embraced innovation and have become leading innovative firms, increasing their revenues dramatically and creating a culture of innovation. The success of all these firms, which have engaged in innovation and succeeded, was due to

having training programs that formed an important part of the development of innovation.

How do we achieve engineering excellence? Scolese (2007) answered this question regarding the development of engineering excellence in NASA:

I see it in terms of four guiding principles: clearly documented policies and procedures, effective training and development, engineering rigor, and open communication. All are necessary to enable people to perform at their best in the unique context of NASA, a high-reliability organization that builds one-of-a-kind systems.

The ITE program presented here implements these guiding principles, emphasizing the need for effective training and development and open communication with the managers. However, this is not enough in itself to achieve innovation. A wider spectrum of activities also needs to be implemented to enable the managers to engage in a comprehensive and detailed process. This includes training and open communication, and practical experience, teamwork, enrichment, and exposing managers to the arts and design fields.

Investment in the human capital of an organization is fundamental to the creation of an innovative organization. The ITE program is inspired from the approach that believes that managers must invent and develop institutions that are “learning systems.” That is, systems that are capable of bringing about their own continuing transformation in collaboration with the new developments out of the company (Schon and Argyris, 1978). This can be achieved if organizations understand the need to change, and teach and motivate their staff and culture to be innovative. Organizations that do not reflect on the change experience will not learn as much as they should (Lawler and Worley, 2006). Understanding the need to change is the first step, followed by a mapping of the culture of the organization and the staff, and then building a program to educate them for innovation, which is the fundamental part.

Innovation becomes a priority only when people are given access to appropriate resources, including funds, materials, training, facilities, and information. In many cases, executives may be troubled that such a process will waste time, energy, and resources (Skarzynski and Gibson, 2008), and will lead to the organization going off into all kinds of “crazy ideas and/or

directions.” However, that is exactly what is necessary: crazy ideas, and the more the better. To be innovative, firms will have to think differently, use a new language, engage in new areas, and expose their organizational culture to new ideas. In some senses, this means acting “crazy.”

Innovation Through Education (ITE) is the result of theory and practice. On the one hand, it is based on learning from those organizations that have implemented innovation successfully. On the other hand, it has come out of years of experience in implementing innovation through educating managers and interns in the Keter Group. Innovation is not only about devising new products; it can and should be applied into every process in organizations (Kelly & Littman, 2005) and that’s why it’s such a big issue, Innovation can help break old patterns and encourage creative thinking or at least different thinking. Jack Welch said, “an organization’s ability to learn, and translate that learning into action rapidly, is the ultimate competitive advantage.” The need for creativity is changing how the workplace is organized and what people do. These changes center on the use and interpretation of information: the basis for ideas. A company's future depends upon how well it acquires, interprets, and acts upon information. ITE is a training program that can help organizations to become innovative, understand information, change, and create value that will enable them to have the competitive advantage that is critical for organizations to survive and thrive during these hectic times.

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3 MARKUS H. GERICKE

INNOVATION STRATEGY FOR SMALL AND MEDIUM SIZE COMPANIES

ABSTRACT Small and medium size industrial companies have to focus their innovation activities in a systematic way to overcome their challenges by limited resources. Whereas the need for company strategy is widely acknowledged, the benefits of introducing and implementing an innovation strategy is rarely actively promoted within smaller companies. The author has observed two companies through an innovation cycle and could measure the differences in innovation efficiency once applying an innovation strategy, once without clear strategy. The result demonstrate the positive impact on the innovation procedure and the output in the case small and medium size companies establish and manage an innovation strategy which is a part of the general company strategy.

Keywords: Innovation strategy, innovation process, innovation organisation, SME

Introduction

If you read the literature on innovation, there are many books and articles about the improvement of the innovation process and its management. Authors of these studies show different path of doing it the best way. The strategic innovation was rather in the shadow of general company strategy, which has changed. Christiansen (2000) is addressing this subject and highlights, that the strategic management of innovation has gained more attention in recent times. The world economy is characterised by globalisation, trade agreements, increasing protectionism, volatile financial markets and relatively cheap transportation options. This trend reduces natural trade barriers and adds more competition into the market.

For enterprises, the pressure to defend their position is increasing. Innovation is consistently found to be one of the most important characteristics associated with sustainable success in the population of growing firms.

Studies on innovation focus either on the output performance of innovation and differentiate between different type of innovation, ranging from novelty, incremental or radical innovation or innovation diffusion technologies. Other approaches are design process oriented, which described the research and development process itself and the third group is treating the innovation as a strategic process within the business strategy.

Improving a firm's innovation performance requires a well created strategy. Baldwin and Gellatly (2003) resume in their research about Innovation Strategies and Performance in Small Firms: "More successful firms tend to place greater emphasis on R&D capability and R&D spending. They are also more likely to stress the development of new technology, to place greater emphasis on using new material, process control and just-in-time inventory techniques. Differences in the emphasis that the two groups give to R&D strategies are accompanied by differences in the intensity of R&D activities. More successful firms are more likely to possess an R&D unit, to have higher expenditure on R&D relative to total investment, and to have higher R&D to sales ratio. The more successful are more likely to report that they use patents." Baldwin and Gellatly base their conclusions on their research specially undertaken to explore various aspects of innovation and performance of small and medium sized companies in Canada. These observations do not surprise. What needs to be added is the conclusion, that a company needs an innovation strategy if the company wants to plan and execute all these success factors. Especially small and medium size companies will be obliged to carefully set the correct priorities if they want to succeed.

The innovation strategy

Taking out the luck of entrepreneurship and having a methodology that leads through the way of shaping, organising and managing a company is a desire and aspiration of many researchers. Bill Murphy (2010) was asking this question as well and was astonished, how many entrepreneurs said, they were just "lucky". Even there might be a lot of truth in such a statement, it cannot be satisfying to rely on luck for planning a sustainable future of accompany. A company strategy is a part of a mosaic, which helps to build on a more systematic basement than pure luck.

The enterprise strategy defines the orientation of a firm's activity and puts it into relation to the mission, financial goals and time axe. The strat-

egy describes the way of how an organisation should reach the goals that are set in the mission. Whilst the strategy helps to focus all participants of an organisation and should sketch the inter-functional collaboration and the input-output expectations it is on an abstract level and in many companies not transparent.

Elaborating and following a suitable enterprise strategy is already a challenge for small and medium enterprises. Even less common is the existence of an innovation strategy.

The innovation strategy has to reflect the goals laid down in the enterprise strategy and translate into actions that focus the innovation process towards reaching the goal. The literature is focussing on various aspects of the innovation process itself or of the enterprise strategy. More research is needed on the setup and interlinking of the innovation strategy with the main strategy. This conclusion was also highlighted by Teece (1986) who argues that firms must develop a set of assets that are complementary to their technological expertise in order to protect their intellectual assets. This competences lie in marketing, distribution, manufacturing techniques, and afters sales services. Also, the benefit and need for the implementation of an innovation strategy needs further attention.

Wolfgang Mewes (2000) is researching since the 70thies on a strategy approach that focusses on the success by specialisation and focussing. Friedrich, Malik and Siewert (2009) work out his concept in their research. They investigate on success criteria for a strategy that bases on the observations of natural sciences with the idea to use existing forces in the best way, to activate energies and the interest of others and to use the principle of the science about power and harmony.

Sauber (2006) is formulating, based on his research on complex, systemic interacting and evolutionary innovation systems, a proposal of how such an innovation strategy could be designed. He structures the process in 3 phases (see page 35):

Phases	Principles	Systematic
Phase 1: Understanding the innovation system	1. Design an architectural blueprint	Understanding the innovation systems in the own organisation.
	2. System analysed with appropriate effort invested	Elaborate the evolution of the opportunities in the full context of the organisation. The interaction of the conditions and opportunities form new architectural models.
	3. Think in functions	Knowing the planned product functions and focussing on them during the development allow a neutral link between technology orientation and market.
Phase 2: Formulating an innovation strategy	4. Ensure strategic fit	The innovation strategy must fit among the companies activities and be in line with the general business strategy and the environment.
	5. Direct focus with consistency	Giving the innovation strategy a specific objective and predefined path.
	6. Define clear responsibility	Point out the project responsibilities and expectations.
	7. Optimise the organisation	Adopt the business organisation to develop the future activities.
Phase 3: Implementing an innovation strategy formulation process	8. Define continuous process ownership	Ensure the sustainable implementation and improvement of the strategy.
	9. Nature participation	Increase the horizon and deepen the impact of the strategy by combining its focus with those of other functions.
	10. Develop a culture of discipline	Care about perseverance and patience during implementation and exploitation

Table 1: Innovation formulation structure developed on the base concept of Sauber (2006)

This structure has its charm in the simplicity of the process and seems to allow also to smaller organisations a way to lead through a strategy creation process.

How far can a small and medium size industrial enterprise benefit from the implementation of an innovation strategy? Are such concepts good in theory but not practical in the real operating life of an organisation?

Benefit from implementing an innovation strategy in small and medium size enterprises

Small and medium sized industrial enterprises have specific strength and weaknesses which influence their sustainable success.

Limitations are expected by:

- Smaller or no dedicated development team;
- Limited financial resources;
- Smaller network with Universities and technical schools;
- Risk exposure to failure of innovation;

Chances are expected by:

- Commitment by management and employees;
- Flexibility in organisation, process setup and workflows;
- Reduced loss of efficiency by internal politics;
- Shorter communication between stakeholders and participants

The factors need to be considered in the general management and leadership duties and ask to pay attention to the organisation of the innovation processes. The question is how far small and medium size companies can improve their innovation output by the implementation of an innovation strategy.

Research methodology

The disadvantage of a large market survey is that it offers data for statistical analysis but allows seldom a deep insight into specific questions. Given the unique opportunity to follow 2 companies Torsten and Nelsen during a innovation cycle I decided to use the method of observation and specific analysis of the result. This methodology does not take the position of being statistically relevant for a number of samples. The big advantage is that it gives a real feedback on a typical case as it is found in many small and me-

dium size companies. I estimate the value of such a research to be very high, as companies are in general reluctant to participate at the big number of investigations and even very critical towards any surveys that disclose confidential information. The selection criteria of the companies have been: Industrial sector with in-house research and development, manufacturing workshop, small to medium size. They should have a structure that is not influenced or shaped by a large multinational or public sector, in order to represent a typical industry enterprise that involves all necessary processes of product innovation and marketing. In respect of the comparison of the results I selected companies with a similar size (approx. 50-60 employees) having a current development project ongoing that would allow the observation within a reasonable time frame.

The cases allowed me to compare the input output ratio and to take conclusions about the different way of following an innovation strategy. The two companies examined for this study employ between 50 and 75 employees. They offer a specific product range of machines used in the processing industry (food and chemical).

The efficiency of the result was measured by

- the organisation;
- management and execution of innovation processes;
- the accuracy of planning and doing innovation in the time frame;
- the degree of novelty of the innovation result, the chances opened by the project to benefit from product differentiation, which creates competitive advantage;
- The project and the cost of the final machine.

In addition I could get feedback from the employees about their enthusiasm to sell the new product which summarizes their judgment of the expected competitive advantage.

Results

The two companies show a clearly different output result of their innovation activities. Company Torsten has achieved within a defined time frame a innovation result, that fulfilled the goals to 100% regarding the technical specifications and to 85% the cost level. The degree of novelty was less achieved in the features but more in the clever design of the machine that

offered a clear manufacturing cost cut to the previous model and potential for further cost savings in the future. The design offered a differentiation potential for the beating competitors' products.

The company Nelsen was postponing the market introduction several times. Finally the new product was fulfilling the expected technical specifications to 80%, the cost level to 95%. The achieved novelty degree was rarely offering real competitive advantages and was not giving an answer to argue to the main competitor's technical advantage which was protected by a patent.

Innovation organisation

The management of the company Torsten had realised that the existing product range does not fit with the changing market demand anymore. A part of it was developed towards a niche segment in which the company could operate successfully but as the price level was increasing, the equipment was not accepted anymore by the larger market segments. By such, the company moved into a spiral of specialisation which pushed them to further develop into a smaller market. The innovation strategy that was developed was based on a market segmentation with a technology and function deployment. This strategy could be communicated to the employees and discussed with market participants.

Nelsen had a product range that was developed some decades ago. The machines worked well and could be called as cash cows for many years. The figures dropped consequently in the more recent time, so that the management was planning to make a product face lift in the way of incremental development. The innovation process was launched officially, but the goals and expectations have not been carefully discussed so they have not been clear to anybody.

Management of the innovation process

Torsten was appointing one dedicated manager to lead through the project. His input was less on the technical side but on the formal leading of the project. The tasks were to include and judge the wishes and to differ between nice to have and must criteria. He was in charge to integrate all necessary stakeholders into the finding and decision processes and could by his

neutral role act as moderator or if necessary as mediator to conciliate between the parties. It is normal that you have discussions and various opinions during an innovation process.

Nelsen couldn't nominate a dedicated management person to guide through the innovation process but this role was taken by the general manager himself. The lack of focus and time, he could investigate paired with a tendency to stick with existing solutions instead of opening new horizons with unconventional solutions was downgrading the project from a innovation process to a work for incremental improvement of design shortages. The lack of overall view and the insufficient implementation into a innovation strategy was irritating and diluting the forces that already have been limited.

Time management

Time is of essence as the project processing time influences the direct cost on development and the opportunity cost of being not yet able to sell a product or service. The project manager which was acting for the moderation had the competence to call for meetings, to report minutes and to liaise with the general management. He was acting as "pace maker". Other team members have been shaking between being satisfied with the progress of the projects and being upset about the pressure that he was generating on behalf of the project continuation. The planning accuracy was influenced by the success of solution finding, by the technical translation into feasible solutions and the available engineering resources for the drawing and testing of the modules.

The Nelsen project team could not work with the necessary attention on the innovation process but was frequently absorbed by tasks arising from the daily engineering jobs. The accuracy of the planning was close to not existent. The frequent disruptions by other than project duties were the reason for inefficiencies and probably one explanation why the incubation of new ideas was missing. The time management is therefore not only an instrument to move along a path for controlling and resource reasons, but influences by the intensity the output of the activities.

Novelty degree

The novelty degree can be seen as elements, functions or services that are acknowledged as new to a target group that solves a need in a different way than existing supplies. The innovation strategy has the role to guide between phases of incremental product improvement and radical invention of new technologies or functions. Torsten was not looking for a radical innovation but rather to create a range of machines that fit exactly with a market segment and should offer differentiation towards existing suppliers. The degree of novelty was less searched in the inbuilt features of the machine but more in the clever design of the machine that offered a clear manufacturing cost cut to the previous model and potential for further cost savings in the future. The design offered a differentiation potential for the beating competitors' products. These goals have been achieved.

The lengthy lack of innovation work was forcing the management of Nelsen to realise some real inventions to gain back a losing position on the market and to mitigate a number of functional advantages of competitor's products. The lack of innovation strategy which would have oriented the team participants to focus their work into the same directions caused a number of inefficiencies. The difficult step of idea finding of inspiration and defining of the new lines was missing and not managed well. The output reflected this by the fact that the product line was not improving most of the shortages but just a modified execution of already existing functions and design elements.

Competitive advantage

Creating unique benefits for customers is a basic intention behind doing innovation. Both companies have been looking for such ones. The Torsten design team could find a price-function combination that made the entire range interesting for customers. The cost advantage could be achieved by the construction design innovation. In order to improve ergonomic and design aspects industrial designers have been used.

Nelsen have been delayed on all development steps and couldn't anymore open the discussion to other idea sources than their internal team which was seldom exposed to the market directly. The time was not there

anymore to engage external industrial design specialists and no input could be collected from various external experts or customers. One good solution was found to improve the inspection of the machine after shift changes, but the execution was not satisfying so that an initial potential competitive advantage was lost in a design that was not including specific strength.

Cost

The project cost have not been monitored neither by Torsten nor by Nelsen. This is probably typical for small and medium size enterprises. The controlling of the cost generated by the innovation activities need to be monitored to get the information on which the pricing of the services or products will be done. The explanation of Torsten was, when challenging them with this problem that they just accumulate the personal cost and the material cost of the directly involved persons. This gives at least basic information about the project cost.

The manufacturing costs are influenced by the design and the manufacturing technologies as well as the environmental conditions of the fabrication location. In the case of Torsten the cost target was set very low to challenge the design engineers who had been used to engineer high end products. This cost target could not be achieved entirely. The result was nevertheless positive as the manufacturing cost of the new product line had been significantly below the earlier cost level and was still at the market cost level.

The new product line of Nelsen was built on the existing design philosophy. Therefore they couldn't break into the former cost structure by applying different manufacturing methods or sources. The achieved results have been at the same level as before. This has to be qualified as insufficient, as the degree of novelty was very low. Expected increase of productivity was not achieved.

Conclusions

Two very typical industrial enterprises are seeking to improve their product lines in order to regain their competitive advantages or to regain the attractiveness in a specific market segment. The setup of the innovation process was entirely different and so the result as well. The conclusion can be drawn that an innovation strategy is necessary also for small and medium

size companies. It forces the management to think about the implementation of the innovation activities within the corporate strategy. This dialogue and the decision taking is the base of the target orientation of all project team members. It allows to generate the necessary financial funds and the human resource pool and to call open source facilities. The management of the creativity process and the controlling of the progress by a moderator which can be engaged from the internal staff or recruited for the project period from external consultants was in the described companies a key element for the successful project leadership. It came out from the study that especially small and medium size enterprises are exposed to the risk that by the interruption and absorption of the operating engineers by the daily business the project will not only be delayed but also suffer efficiency and loss of gain of competitive advantages. The organisation and management of the innovation process itself needs a different organisation from the daily business.

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4 JAROSLAW OCZKI

FORECASTING INTERNAL LABOUR SUPPLY WITH A USE OF MARKOV CHAIN ANALYSIS

ABSTRACT Manpower planning and forecasting can contribute to improving company's performance. Implementation of certain straightforward planning techniques can result in higher effectiveness of human resource policy and increased competitiveness of the organization. In this paper, a number of methods of forecasting internal labour supply has been described. Markov chain model has been characterized in more detail and a numerical example of manpower planning in a retail store, based on this approach has been presented. The main limitations of implementation of Markov model to internal labour supply forecasting have been discussed and conclusions drawn.

Keywords: human resources, internal labour supply, manpower planning, Markov chain model

Introduction

Business decision makers attempting to forecast company's internal labour supply tend to rely on judgement and intuition rather than rigorous statistical analyses (Taylor 2005, p. 97). They argue that rapidly changing company's environment and high level of uncertainty in contemporary economies make human resource planning increasingly difficult and the companies overly bureaucratic and rigid (Marchington and Wilkinson 2005, p. 158). Some specialists claim that competitive advantages of today's organizations come from the ability to generate swift and flexible responses to the fast changing economic and social environment and sophisticated forecasting methodology can stifle these qualities. Researchers in the field of management point out several reasons why decision makers can be reluctant to adopt a statistics-based approach to personnel planning (Taylor 2005, p. 98):

- hostility to the use of statistical techniques in place of intuitive judgement, and fear of mathematical methods,

- ignorance of decision makers, who are unaware of personnel planning methods,
- belief that human resource planning is not vital for achieving economic efficiency,
- short-termist approach,
- decentralization of contemporary organizations,
- practical problems resulting from the lack of reliable data for a formal analysis,
- controversy about the usefulness of past data for predicting future trends.

Despite some scepticism concerning the use of formal methods in management, systematic labour force forecasting based on quantitative methods can significantly contribute to organization's success. Human resource planning could have prevented, or at least eased, labour and human capital shortages suffered by companies in the past. The high turbulence and complexity of today's business environment – a point frequently raised by the opponents of the use of formal methods—can be seen more like an argument *for* application of sophisticated techniques of planning, rather than against it. Often, there is no need for pin-point accuracy—the use of forecasts can just contribute to the reduction of the level of uncertainty. Managers should view the planning process as flexible and adaptable anyway, so that unexpected changes in the environment could be catered for.

Methods of forecasting internal labour supply

A variety of methods designed for forecasting organization's internal labour supply are used. They can be divided into:

- qualitative methods: staffing charts, replacement charts, succession planning, skill inventories, and
- quantitative methods: analysis of wastage and stability indices, and Markov analysis.

Staffing charts are special tables including all job categories within an organization, the number of persons occupying those positions and the number of employees to be hired in a particular year. They do not show whether the planned new posts will be filled or not, they are merely used to show the total number of employees at the end of the budget period (Rothwell and Kazanas 2003, p. 223). Replacement charts present a list of current employees, their positions, promotion possibilities and potential replacements. They are prepared in order to secure the smooth transition of duties in case a sudden loss of certain key workers, especially the executives, occurs. Succession charts contain more detailed information and cover not only managers but other workers as well. They are used for long-term planning of

employees development in the company. Succession planning programs usually include (Rothwell and Kazanas 2003, p. 225):

- data on candidates: performance appraisal results, career interests, etc.,
- job requirements and descriptions, connections between positions through career paths indicating what skills, education and experience is required to move from one place to another,
- formal procedure of systematic review of information on the candidates' qualifications in relation to the position requirements,
- development plans for employees, special assignments and testing methods for assessing their achievement,
- candidates' succession summaries which point out their strengths and weaknesses, as well as position succession summaries indicating what employees are ready for taking over particular position or what should be done to facilitate the promotion to the position.

Another type of tool of manpower planning are skill inventories. They are very detailed databases which can serve as a source information for succession planning programs. Specifically, they include: employee name, date of birth, date of hire, work location, present position title, previous position titles, educational background, training completed, fluency in foreign languages, career objectives, professional licenses, publications, salary history, medical record, hobbies, and any other information which company considers relevant.

Quantitative methods of forecasting internal labour supply are based on employee turnover (exit, wastage) rate (Marchington and Wilkinson 2005, p. 162) or Markov analysis. The turnover index indicates a number of leavers in a particular period of time as a share of the average number of employees¹. Turnover rates depend on a variety of employees' demographic, social and economic characteristics, as well as on labour market conditions. Usually, exit rates are higher (Taylor 2005, p. 86):

- the lower the age of an employee,
- the shorter the span of work in a particular company,
- the lower the employee skills and responsibility,
- the lower the unemployment rate in the economy².

There are two types of labour turnover: involuntary and voluntary³ (Secord 2003, p. 197). Involuntary leaves can be easily predicted by decision makers since they result from retirements, planned promotions and redundancies. Human resource managers are much more concerned with voluntary exits, as it is much more difficult to be prepared for them. It is never possible to calculate their future values accurately. To some extent, their levels are influenced by company's personnel

policy, e.g., higher voluntary exit rates can be expected, when a company deliberately offers poor working conditions and salaries, or little development opportunities for employees.

Companies can benefit from predicting future exit rates. In some cases it is possible to use information from consulting agencies, however, the use of such data is limited as exit rates for a particular company will differ from the general, countrywide or sector-level values. Estimates of turnover are usually based on past experience of a specific organization and on an analysis of promotion patterns for specific homogenous employee cohorts. A company-wide turnover rate can be useful for comparisons with last year's or competitors' figures, but it is not suitable for forecasting internal labour supply as it averages out the differences between specific groups of employees. In order to obtain required accuracy of forecasts an analyst should break employees into cohorts and calculate separate figures for each group which will then serve as input data for calculating future values of labour supply.

Another quantitative method of labour supply forecasting, similar to exit rate analysis, is based on Markov chain model (Van Utterbeeck et al. 2009). This approach assumes that the company's current internal manpower supply in a particular class (group of employees) depends on the stock of employees in that class in previous period (e.g. last year), and on percentage ratios representing shares of those members of the class who had been promoted, demoted, transferred, made redundant and those who had left the organization voluntarily.

Markov chain model as a tool of forecasting internal labour supply

Let us consider that company's employees are broken into N job categories (classes), and $n=1, 2, 3, \dots, N$. Let $n=0$ refer to the external environment of the organization, that is a source of new workers and a destination for leavers. Let us

define $s_i(t)$ as the employee stock in job class i at time t ; labour supply vector

$s(t) = [s_1(t), s_2(t), \dots, s_N(t)]$ represents the number of employees in each class at

$$\sum_{i=1}^N s_i(t)$$

observation point t . The total workforce at time t equals

We refer to period t as the time interval between observation points $t-1$ and t . In

order to account for changes in the system, a variable $f_{ij}(t)$ is introduced, which represents the flow of workers between class i and j , i.e. the number of

employees that belong to the job category i at point $t-1$ and to the class j at observation point t .

The stock of manpower in class j can be expressed as a sum of all inflows in period t :

$$s_j(t) = \sum_{i=0}^N f_{ij}(t) \quad (1)$$

The sum expression includes not only the movements of employees, but also the number of individuals staying in class j during the whole period, which is represented by the flow $f_{ij}(t)$ for $i=j$ (i.e., the “flow” from class j to class j).

The formula (1) can be rewritten as follows:

$$s_j(t) = f_{0j}(t) + \sum_{i=1}^N f_{ij}(t) \quad (2)$$

where $f_{0j}(t)$ is the inflow of employees from external source to class j .

The flow from job category i to j can be expressed as a fraction of the stock of employees in class i at previous observation point $t-1$:

$$f_{ij}(t) = q_{ji}s_i(t-1) \quad (3)$$

for $i = 1, 2, \dots, N$, and $j = 0, 1, \dots, N$, where q_{ji} is the fraction of employees from class i that moved to class j in period t .

When combining (2) and (3) we can rewrite the formula for manpower stock in class j at the end of period t :

$$s_j(t) = f_{0j}(t) + \sum_{i=1}^N q_{ji}s_i(t-1) \quad (4)$$

If we define $f_0(t)$ as a vector consisting of the inflows from external sources –

$f_{0j}(t)$, and Q as a matrix containing the values of q_{ji} , we can write (4) in a matrix form:

$$s(t) = f_0(t) + Qs(t-1) \quad (5)$$

where $s(t)$ is a vector of labour supply.

Formula (5) can be transformed into transition equations of a stochastic Markov chain (Van Utterbeeck et al. 2009, p. 3). We assume that the total number of employees remains the same in period t , i.e. all vacancies are filled, and we define:

- the recruitment $N \times 1$ vector $r = [r_1, r_2, \dots, r_N]^T$, consisting of r_j – fractions of the total recruitment of manpower that supplies job category j ,
- the attrition $1 \times N$ vector $a = [a_1, a_2, \dots, a_N]$, where $a_j = q_{0j}$, i.e. the fraction of employee stock in class j that leaves the organization.

Let us now assume that all vacancies created in the system are filled from external sources at each point in time. The number of vacancies in period t :

$\sum_{i=1}^N a_i s_i(t-1)$ is equal to the sum of external recruitment flows into each class:

$$f_{0j}(t) = r_j \sum_{i=1}^N a_i s_i(t-1) \tag{6}$$

After inserting formula (6) into (4) we can write:

$$s_j(t) = \sum_{i=1}^N (r_j a_i + q_{ji}) s_i(t-1) \tag{7}$$

for $j=1, 2, \dots, N$.

The introduction of matrix $P = r \cdot a + Q$ gives:

$$s(t) = P s(t-1) \tag{8}$$

Formula (8) is an equivalent of transition equations for a stochastic Markov chain,

where $s(t)$ is a vector of labour supply and P is a stochastic matrix with non

-negative elements $p_{ji} \geq 0$. It can be used for forecasting internal labour sup-

ply in an organization. Since $\sum_{j=1}^N r_j = 1$, and the fraction of employees leaving

class i $a_i = q_{0i}$ (which is equal to $q_{0i} = 1 - \sum_{j=1}^N q_{ji}$), all columns of P sum to 1:

$$\sum_{j=1}^N p_{ji} = a_i \sum_{j=1}^N r_j + \sum_{j=1}^N q_{ji} = 1. \quad (9)$$

Wang (2005) indicates three potential limitations of Markov chain model applied to human resource systems. Firstly, Markov model is a descriptive, or explanatory, one. It is not an optimization model and it does not indicate the best solution in terms of the minimization of costs or maximization of productivity. Secondly, Markov model is linear⁵—it does not allow for feedback mechanism on the wastage rate (e.g. the impact of employees promotion prospects on turnover rate). Thirdly, a number of employees in each job category must be large enough so it is possible to estimate trustworthy probabilities for the transition matrix. It is best when job classes consist of more than 100 employees to fulfil the sample size requirement. This is why Markov model is frequently used in analyses of very large organizations or even whole sectors, such as defence (Van Utterbeeck et al. 2009), (Škulj, Vehovar and Štamfelj 2008), (Chin-Tsai, Su-Man and Chang-Tzu 2001), or health sector (Huan-Cheng et al. 2008) and (Trivedi et al. 1987). In small and medium sized companies it is difficult to build relatively homogenous groups of workers that would each contain large number of individuals. Nevertheless, Markov models are applied even in cases when sample size is smaller than 100.

Manpower planning on the example of a retail company

In this part of the article an internal labour supply analysis for a retail store based on Markov chain is implemented. The employees of the company are broken into five classes reflecting five job positions in the store's organizational hierarchy, from top to bottom: store managers, assistant store managers, section managers, department managers and sales associates. Table 1 presents the matrix containing probabilities of employee flows between job classes for the year t . In this example the values of probabilities have already been estimated on the base of past values and assumptions regarding company's promotion policy. Figures in each column sum

to 1. It follows from the matrix that, for example, 10 per cent of Section Managers are expected to get promoted to the post of Assistant Store Manager in period t and 5 per cent of them will be demoted, while 73 per cent of employees belonging to this job category will remain in the same position, and 12 per cent will leave the company, either voluntarily or involuntarily.

Job category	Store Managers	Assistant Store Managers	Section Managers	Department Managers	Sales Associates
Store Managers	0.90	0.08	-	-	-
Assistant Store Managers	-	0.85	0.10	-	-
Section Managers	-	-	0.73	0.11	-
Department Managers	-	-	0.05	0.69	0.07
Sales Associates	-	-	-	0.02	0.71
Exits	0.10	0.07	0.12	0.18	0.22

Table 1: Probabilities of employees' flows in a retail company
Source: based on retail store data.

Markov chain model uses transitional probabilities and stock of employees at the beginning of period t (observation point $t-1$) to determine forecasted internal labour supply at the end of the period (observation point t). A flow from job category i to j in period t is equal to a fraction of the stock of employees in class i at

$$f_{ij}(t) = q_{ji}s_i(t-1)$$

observation point $t-1$, i.e. . In table 2, the second and ninth columns contain input data from the store employment records. They show the number of workers in each job class at the beginning of period t , and the values of demand for labour in each category in period t , respectively. Values representing the flows of employees, rounded to natural numbers, are presented in bold in columns 3-7 (shaded areas).

Table 2, on the next page indicates flows of employees (rounded to whole numbers), stock of manpower and recruitment needs.

Job category	Number of employees at $t-1$: $s_j(t-1)$	Store Managers	Assistant Store Managers	Section Managers	Department Managers	Sales Associates	Forecasted internal supply at observation point t : $\sum_{j=1}^6 s_j(t-1)$	Manpower demand in period t : $s_j(t)$	Number of employees to be hired in period t : $f_{0j}(t)$
1	2	3	4	5	6	7	8	9	10
Store Managers	16	0.90*1	0.08*5	-	-	-	-	19	19
Assistant Store Managers	58	-	0.85*5	0.10*1	-	-	66	68	2
Section Managers	170	-	-	0.73*1	0.11*5	-	180	183	3
Department Managers	512	-	-	0.05*1	0.69*5	0.07*2	529	529	0
Sales Associates	2387	-	-	-	0.02*5	0.71*2	1705	2603	898
Exit	x	0.10*1	0.07*5	0.12*1	0.18*5	0.22*2	643	x	x

Table 2: Flows of employees (rounded to whole numbers), stock of manpower and recruitment needs
Source: own calculations

The forecasts of internal labour supply in each job class are shown in column 8. The external recruitment needed in a particular job category indicated in column 10. For example, a number of employees that need to be hired in the Sales Associates class equals

$f_{05}(t) = 898$. The number of vacancies in the whole manpower system in period t equals

$$\sum_{i=1}^N a_i s_i(t-1) = 903$$

(the sum of column 10 of table 2). Taylor (2005) proposes a simplified approach to forecasting manpower supply that does not require estimating probabilities of workers' flows between job categories. Instead of using transition matrix, the number of posts that need to be

filled in class j in year t , $f_{0j}(t)$, can be calculated with a turnover rate T_j and a ratio indicating a share of vacancies usually filled from internal sources I_j . The expected number of vacancies created in class j in period t , V_j , can be calculated with the following formula:

$$V_j = s_j(t)(1 + D_j)T_j, \quad (10)$$

where:

$s_j(t)$ - labour supply in class j in period t ,

T_j - turnover rate based on past trends,

D_j - expected rate of increase in labour demand during period t .

The number of posts which have to be filled from external sources is calculated as:

$$f_{0j}(t) = V_j(1 - I_j), \quad (11)$$

where I_j is a share of vacancies typically filled by internal promotion.

Turnover rates are estimated on the basis of past data and managerial judgement, while the fractions of vacancies that are filled by promotions follow from the company's personnel development and promotion policies. The approach proposed by Taylor requires less detailed input data to generate estimates of internal labour supply as compared to Markov chain analysis.

Conclusions

Internal labour supply forecasting contributes to a more accurate human resource planning and, in result, through reduction of HR costs, to an improvement of company's performance. It supports the process of managing recruitment costs, but also facilitates the human capital management, due to enhanced timing and targeting of promotions and training. A number of sophisticated methods have been adopted in the field, such as succession planning programs or Markov chain analysis. Markov model has been applied in a number of studies concerning, especially, large organizations or even whole sectors of the economy, e.g. defence and

health sectors. The model can be implemented to forecasting internal labour supply of a company, e.g. a retail store, in a form of simple, easy-to-use procedure. Its application is only possible when a company maintains a system of gathering and keeping human resource data, and when decision makers plan ahead employee promotions. The output of the analysis are forecasts of internal labour supply in each job category within an organization as well as the number of future vacancies which have to be filled from the labour market.

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NOTES

1. *The employee turnover can also be analyzed with a stability index, which indicates the percentage of workforce with n years' service at a given date in total number of employees n years ago.*
2. *Taylor reports that the general turnover rate in the United Kingdom at the bottom of the recession in 1992 was 10 per cent, while in 2004 when the economy was growing it reached the level of 20 per cent (Taylor 2005, p. 87).*
3. *Voluntary leaves can be further broken into those resulting from "pull" (external) factors – labour market opportunities, attractiveness of job offers from the competing employers, and "push" (internal) factors, such as a dissatisfaction with a job or a conflict with co-workers.*
4. *$j = 0$ when an employee leaves the company.*
5. *Some authors report that non-linear models outperform linear models. For overview of those studies see (Wang 2005).*

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5 TATIANA GAVRILOVA, ARTEM ALSUFYEV & ANNA-SOPHIA YANSON

BUSINESS MODELS VISUALIZING: FROM MATRIX TO MIND MAP

ABSTRACT This paper provides a new framework for visualizing business models, guided by well-shaped visualization based on hypergraph technology, specifically, mind mapping. Our approach presents the future evolution of Ostervalder's ideas. To evaluate the efficiency of the proposed framework we conducted a pilot study involving an experiment with 22 experienced top-managers of Russian companies and examined their perception of three business models description approaches involving linear text, Canvas business model by Alexander, and business model mind mapping template. Results reveal that the developed mind mapping visualization framework can be considered as cognitive scaffolds and is positively associated with improved perception and understanding of the business model by managers allowing them to communicate, share and manipulate business model knowledge easily.

Keywords: business model, mind mapping, visualization, business model canvas

Introduction

This paper discusses the results of an experiment aimed on comparison of different forms of business modeling. The stress is put on graphical information representation as a growing body of theoretical literature and empirical evidence shows that visual representations help to improve the understanding of business relationships.

The development of new business models presents a critical and demanding task for organizations (Chesbrough, 2006; Christensen & Raynor, 2000) because the need for a new business model often emerges from a serious crisis concerning the firm and its current business model, which in turn threatens its survival in a changing market (Johnson, Christensen, & Kagermann, 2008; Meehan & Baschera, 2002).

Developing business model ideas is not an individual task. Idea generation tasks are generated in both formal and informal group collaborations (Garfield, Taylor, Dennis, & Satzinger, 2001; Maccrimmon & Wagner,

Business model studies overview

The term “business model” (BM) was first used in the context of data and process modeling (Osterwalder, Pigneur et al 2005), and it became the established expression among those working in the emerging new technologies sphere at the end of the 1990s. Later this definition was extended to managerial and academic spheres. A whole set of definitions found in literature show that a firm’s business model explains how a firm creates value. Generally speaking, business models (BM) define how the pieces of a business fit together (Magretta 2002).

The increased usage of the BM term is highly correlated with the emerging of Internet related business, globalization and contract manufacturing (Bellman et al. 1957, Osterwalder et al. 2005). The mutations that were responsible for its development are not only technological, but there are also economic factors such as searching for shareholder value creation and also regulatory factors, especially the deregulation of the telecom sector, which had a significant influence and led to the emergence of new businesses, creating revenue models, and complexity of inter-firm relations (Redis, 2007).

Scholars advocate use of BM as a representation tool for explicating a firm’s current or future value creation and value-capturing logic (Shafer *et al.* 2005), as a structured template for how to transact with business partners (Amit and Zott 2001), as a cognitive framework for translating technological input into economic output (Chesbrough and Rosenbloom 2002), and as a narrative device for structuring discourses throughout new venture creation processes (Doganova and Eyquem-Renault 2009).

Osterwalder (2004) provides a detailed analysis of business model literature and gives the following definition: a business model is a conceptual tool that contains a set of elements and their relationships and allows expressing a company’s logic of earning money. His full definition includes such important parameter as the “network of partners”.

Business model describes the logic of a “business system” for creating value, which lies behind the actual processes. Capturing, storing, and following business models in a company are a form of knowledge management that will increasingly gain importance. The first step in managing business model knowledge is describing a company's model explicitly. In knowledge management this externalization is known as the process of

articulating tacit knowledge into explicit knowledge (Nonaka et al. 1995). Conceptualizing business models plays an important role in externalizing business models. An important advantage of capturing and storing business model knowledge is that it can be visualized, communicated, shared, and manipulated easily.

The diversity of approaches to defining business model has been described in (Sabir, Hameed, Rehman, & Rehman, 2012). It is logical that such diversity leads to multiplicity of visualization approaches towards business models (Chang, Wills, & De Roure, 2010; Osterwalder, Pigneur, & Tucci, 2005; Osterwalder & Pigneur, 2010; Osterwalder, 2004; Sabir et al., 2012; Samavi, Yu, & Topaloglou, 2008; Schütz, Neumayr, & Schrefl, 2013). Still the major form of business knowledge capture is linear text. The main advantage of linear text is that it is the most familiar, traditional and easy form of representing ideas. However, it misses many tools available to the cerebral cortex of the human brain, which diminishes its efficiency.

One of the most popular practical tools for visualizing and developing business model is Canvas model developed by Alexander Osterwalder (Osterwalder & Pigneur, 2010). The example of Canvas map designed for KFC Company is presented in table 1 (appendix 1, page 77).

Canvas model consists of nine blocks that represent the underlying logic of business processes. Firstly, a company is operating with the orientation on particular *customer segment* of group of segments. Meeting customer needs is achieved by forming *value propositions*. These value propositions are delivered to customers through communication *channels*, distributors and sales channels. *Customer relationships* are established and maintained with each customer segment. Company gains *revenue* streams resulting from value propositions successfully offered to customers. *Key resources* are the assets required to offer and deliver the previously described elements by performing a number of *key activities*. Some activities are outsourced and some resources are acquired outside the enterprise by turning to *key partners*. The business model elements result in the *cost structure*.

Modern management models have tried to reduce complexity of the world by considering ideas into different forms of matrix or tables. This was heavily influenced by spreadsheet programs. BM Canvas by Alexander Osterwalder presents in essence a table which is strengthened by some visual elements. But it, firstly, includes pretty many elements from the stand-

point of short-term memory capacity. Secondly, it has rather specific logic in placement of these elements. Thirdly, it is characterized by disconnection of the elements within the main framework. Mind mapping could help to overcome some of these issues.

Visualization using mind mapping as business model development tool

The cognitive benefits of visual representations include facilitating elicitation and synthesis of information, enabling new perspectives to allow better, more exhaustive comparisons and facilitating easier recall and sequencing; the social benefits include integrating different perspectives, assisting mutual understanding, and supporting coordination between people; and finally the emotional benefits include creating involvement and engagement, providing inspiration, and providing convincing communication. As for the cognitive benefits, Larkin and Simon (1987) and Tversky (2005) report that a human's input channel capacity is greater when visual abilities are used. Vessey 1991 reports that visualization aids in solving complex problems by compressing information. Visualization is instrumental in the analysis of data as it helps in identifying patterns and structures in data sets (Card et al. 1999; Tufte, 1990). Better, more exhaustive comparisons are proved by several empirical studies that show that visual representations are superior to verbal sequential representations in different tasks (Bauer and Johnson-Laird, 1993, Glenberg and Langston, 1992, Larkin and Simon, 1987). Visualization expands working memory (Norman 1993) and thus makes it easier to keep details about options in mind when comparing them (Lurie & Mason, 2007). Assisting mutual understanding is gained with visualization because graphic metaphors provide a visual means to assure mutual understanding by making basic assumptions explicit (Morgan, 1986).

On the whole, in the analysis stage, visualization is most valuable because of its cognitive benefits. It helps with the elicitation and synthesis of data, and specifically, its synthetic ability enables managers to process more data while avoiding information overload and the attendant mental shortcuts or cognitive biases involved. Visualization can also help to elicit managers' implicit mental models, and align a management team's assumptions. In the strategy development stage, visualization aids the generation of

options for action. These options include potential strategic goals, milestones, activities and possible resource deployments. Visualizing many feasible options, together with their parameters, allows them to be more easily assessed, selected and made operational in the subsequent planning stage. At the implementation stage actions, relationships and results need to be visualized. A great strength of a carefully constructed visualization is that it can employ engaging images and inspiring symbols to trigger positive emotions and motivate a workforce. Creative thinking is needed in order to develop images that will capture employees' attention and imagination and promote buy-in for new strategy through original and informative ways of communicating it.

One of the most complex stages of the strategic planning is the development of a new business model. Business model innovation triggers individual and organizational challenges. The former involves issues related to complexity, existing dominant logic and knowledge required whereas the latter includes issues resources, values and teams (Hoffmann & Eppler, 2011). Visualization can help to solve these issues by providing flexible and provisional, and at the same time accessible and persistent quality of visualizations. Visual tools help to overcome the challenges firms face when innovating their current business model by fostering strategic change through clarifying, organizing and uncovering relationships, dependencies and pointing towards successful strategies.

The above mentioned issues can be easily and straightly illustrated by applying to mind mapping as a tool for business model development. Mind mapping (MM) now is the most popular tool for handling big amounts of business information in big companies (Eppler, 2006; Mento, Martinelli, & Jones, 1999). Leading corporations across the world are beginning to mind map. For example, at the web-site of Novamind which is a popular mind-mapping software there is a long list of companies that are using mind mapping in their activities. This list includes Microsoft, The Coca-Cola company, Deloitte, NASA, HP Company, University of Oxford, Cisco, Nestle and others (Visualize your information to get things done, n.d.). In order to enhance innovative performance companies usually turn to mind mapping (Cisco UK Uses Mindjet to Promote Innovative Startups, n.d.). This highly effective diagramming method was coined by Tony Buzan and illustrates thoughts, concepts, relationships, associations, and consequences all

connected to a central hub representing the main idea (Buzan, 2003). The example of a mind map is presented in Figure 1.

Unlike any other diagrammatic method, mind mapping allows not only simultaneous organization of complex relationships, but also a clear, focused visual model of a central concept. Mind mapping works as cognitive scaffolds (Shneiderman, 1996):

1. by increasing the memory and processing resources available to the users,
2. by reducing the search for information,
3. by using visual representations to enhance the detection of patterns,
4. by enabling perceptual inference operations,
5. by using perceptual attention mechanisms for monitoring, and
6. by encoding information in a manipulable medium.”

Companies as well as knowledge-intensive firms, business schools and universities in particular, are now using mind maps to challenge their employees to think creatively and in systemic structured way (Ashakiran, Murthy, Deepthi, Prabhavathi, & Ganesh, 2012; Davies, 2011; Evrekli, İnel, & Balim, 2011). Usually maps work in brainstorming sessions, presentations, strategic sessions and meetings (Maas & Burgess-Wilkerson, 2011; Somers et al., 2014). These maps are an excellent way to walk people through complex concepts and can be associated with cognitive, emotional and social benefits. That is why even high-level executives and professionals are including them in their presentations (Ashakiran et al., 2012; Maas & Burgess-Wilkerson, 2011; Somers et al., 2014) as clear slide of a well-designed MM (there are several software solutions for this) will keep the audience focused throughout the entire presentation.



Figure 1: Organization theory mind map

In this paper we argue upon the ambiguous idea of a BM. With a business model mind map, people clearly understand the specifics and idea of business and easily see how it relates to their work as a whole. Three main features of MM facilitate the general understanding. They are:

- a. Using colours to underlay the parts,*
- b. Embedding different font sizes to stress the level of granulation,*
- c. Inserting images to attract attention.*

Mind maps are not the only way for business visualizations. Concept maps are also effective for knowledge mapping (Novak, 2002; Eppler, 2006). Knowledge maps are node-link representations in which ideas are located in nodes and connected to other related ideas through a series of labeled links. The research on knowledge mapping in the last decades presented a number of interesting substantial findings. People recall more ideas when they learn from a concept map than when they learn from text and those with low verbal ability or low prior knowledge often benefit the most (O'donnell, Dansereau, & Hall, 2002). The use of knowledge maps also appears to amplify the benefits associated with scripted cooperation. Concept maps have, however, some shortcomings (Eppler, 2006) and they may not fit all types of cognitive styles of personalities, or business topics. They have the relatively strict formal rules that need to be adhered to when drawing a concept map. The stress on identifying concepts (and their multiple relationships) do not make it a simple, seamless or very rapid visualization technique.

In addition, the general top-down structure of concept maps may not match for representing the structure of sequential content such as processes, time-lines, or developments. The boxes and arrows format may also make it rather difficult to efficiently represent a great number of related items in an accessible format. That is why in this paper we propose to use mind mapping for visual compression of "canvas" business-model.

Also we want to underline another benefit of using visualization. That is its creative power. Visual images facilitate creative thinking with a new way of looking at problems or situations from a fresh perspective that can help to produce unorthodox solutions. Almost all the gurus of creative thinking (Dacey, 1989; Sternberg, 1999; Mihalko, 2006) mention visualizing among its first important features. We can regret that there are quite a lot of pseu-

doscientific speculations now on the left/right brain hemisphere asymmetry. However, the fact that imagination, visual processing and creativity are “co-located” together in the right part of the brain is of no doubt now (Springer, Deutsch, 1998; Hugdal, 2005).

Research Methods and Main Findings

As it was mentioned in the introduction section we pose the following research question: *“Does business model mind map template allow managers to create common meaning regarding business ideas and better understand the logic of business processes within company?”*

Recent studies in the field show that using business model templates (like business model canvas template by Alexander Osterwalder (Osterwalder et al., 2005) considerably enhances perceived collaboration but decreases perceived creativity and adoption of the development business model by managers whereas using objects and sketches has significant positive effect on perceived creativity and adoption level of designed business models (Eppler, Hoffmann, & Bresciani, 2011).

Based on the results of this study we assume that business model mind map template could combine benefits of Canvas template and sketches by providing more flexibility in software environment thus allowing managers to create common meaning regarding business ideas and better understand the logic of business processes within company. For this reason the business model template has been developed based on canvas template (presented in figure 1).

The Business Model mind map introduced in this paper extends Osterwalder’s work, adding the flexibility of mind mapping and allowing for enhanced creativity. Like the Business Model Canvas, our MM template can be enlarged and printed out for an entrepreneur or business development team to mark up or apply notes.

The development of the business model map was in accordance with four stages recipe proposed by T. Gavrilova (Gavrilova, 2010): (1) goals, strategy, and boundary identification; (2) glossary development or meta-concept identification; (3) laddering, including categorization and specification; (4) orchestration.

At the first stage goals, strategy, and boundary identification took place. The authors used Canvas model developed by Alexander Osterwalder

(Osterwalder & Pigneur, 2010) as the basis for further modifications.

The second stage involved authors into conduction of main meta-concept identification and grouped nine canvas template blocks into *four* clusters: *products, customers, finance, and environment*.

The third stage was devoted to laddering, including categorization and specification. We categorized the business model blocks in the following way. “Products cluster” includes key activities and value proposition block. “Customers cluster” includes customer segments, customer channels and customer relationships. Authors formed “Finance cluster” that include revenue flows and cost structure. The fourth cluster “Business environment” included relationships with partners and key resources blocks.

The final stage of BM map development was related to updating the visual hierarchical structure by excluding any excessiveness, synonymy, and contradictions. The main goal of this final step is to create a beautiful or harmonious view (Gavrilova, 2010). For this reason at first every branch of the BM map was assigned its specific color. Then we had to attach an image to every block. For this reason we conducted a survey with top-managers of Russian companies and asked them to choose the most appropriate image from a palette of five icons related to every concept in the BM mind map.

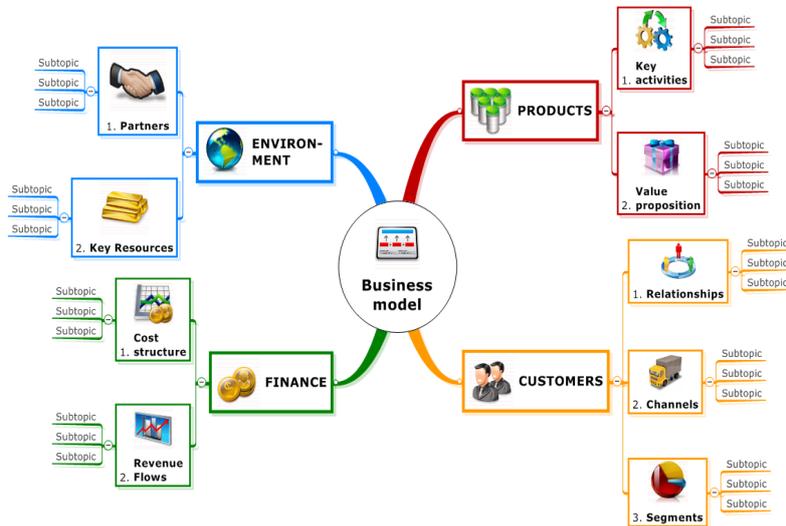


Figure 2: Canvas Business Model mind map

To evaluate the efficiency of the developed MM template we conducted a pilot study involving an experiment with 22 experienced top-managers of Russian companies (Executive MBA programme participants) and examined their perception of three business models description approaches. As an example the KFC BM was taken. First, BM was presented as linear text since it is the most traditional, wide-spread and easy form of representing ideas. Second, we used Canvas BM by Alexander Osterwalder (Osterwalder & Pigneur, 2010) shown in Table 1 (page 77). Finally, the developed BM MM template was used as presented at Figure 3.



Figure 3: Business Model mind map KFC Company

During the experiment the main group of participants was divided into three sub-groups. Each of the sub-groups was offered one of the three mentioned above business models descriptions of KFC company. Each group had a limited amount of time to get acquainted with the company's BM after which they were asked to answer a set of questions related to the company's business processes. The results of the experiment show that BM description in the form of mind map has approximately the same efficiency as other methods. The experiment followed by the discussion session. It showed that participants preferred BM MM as the most *structured* and *comprehensive* one. Also they mentioned that text BM was a bit boring. They positively assessed Canvas matrix which despite being unique in its applicability to almost every business enterprise included too many elements from the standpoint of short-term memory capacity. Also it needed some cognitive effort to understand the logic in placement of main elements in the table. Some participants put stress on the disconnection of the elements within the main matrix.

Since the pilot study was conducted with illustrative aims and not with the goal to generalize results, more thorough investigation of the BM mind map is required through enlarging the experiment sample and controlling for other factors related to motivation level, cognitive style and previous experience with mind mapping.

Conclusions

A considerable amount of research in the field of knowledge visualization has been devoted to the investigation of the role of graphical notations in management (Eppler & Burkhard, 2007; Eppler & Platts, 2009; Eppler, 2004). Many scholars paid particular attention to the strategic planning process and how visual aids can help to overcome issues related to the process of strategic planning (Eppler & Platts, 2009). Overcoming these issues lead to three groups of benefits: cognitive, social and emotional. Also such visual mapping is a first step to visual system thinking and it greatly contributes to effective company knowledge management.

The results of our pilot study indicate that using of a novel visual form of business model was positively assessed by management practitioners. Big group of participants mentioned the significant increasing of perceived understanding. The experiment reveals that the developed mind mapping

visualization framework can be considered as cognitive scaffolds and is positively associated with improved perception and understanding of the business model by managers allowing them to communicate, share and manipulate business model knowledge easily.

Our approach to business model mapping can be a powerful tool in developing and evaluating business opportunities before a formal business plan is prepared. The methodology is broadly applicable—for new ventures or established business, for non-profit and for-profit organizations, for incremental adjustments to business strategy or major departures into new markets. Business model mapping can rapidly document and evaluate a large number of opportunities making it vital to firms in fast-moving markets or high-technology environments. Every participant has the opportunity to present their ideas, share them with others, and feel satisfied that it has received a fair hearing. After all maps are completed, leadership can begin the process of sifting through alternatives, setting priorities, laying out implementation stages and determining resource requirements over a realistic planning horizon. Coupled with the resources and new programs promoting and supporting entrepreneurs and entrepreneurship, business modeling, in general, and business model mapping, in particular, have the potential to speed development and shorten the time between conception and launch.

Also we want to underline another substantial benefit of using visual approach. Designing visual business models facilitates creative thinking with a novel way of looking at company problems, processes and actors from fresh perspective that can help to produce an innovative solutions.

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Appendix 1

Table 1. Canvas business model for KFC Company

 Key Partners PepsiCo Food suppliers	 Key Activities Catering Management Logistics Management Franchise Management	 Value Proposition Homemade Chicken Secret recipes Affordable prices Fast service	 Customer Relationships Customized personal assistance	 Customer Segments Non fast food lovers Franchisers
 Key Resources Brand Storage Logistic Network Catering Toolkit	 Customer Channels Home Phone Web-site	 Cost Structure Branding/ Communication Catering Van Storage and Tools Product innovation	 Revenue Flows Catering Service Fee Franchising	

6 SEAN MCCUSKER

LEGO®, SERIOUSLY: THINKING THROUGH BUILDING

ABSTRACT LEGO® Serious Play™ (LSP) is a methodology which has been developed primarily for use in business contexts, initially with *Real-Time Identity for You*, *Real-Time Strategy for the Team* and *Real-Time Strategy for the Enterprise*. However, many of the principles which underpin the methodology are supported within the educational research literature. The findings discussed here represent some of the efforts in reclaiming LSP for the educational domain. The current study introduces LSP as a method of getting at participants' understanding of their own professional identities. It details the process of the development of workshops and reflects on the aspects of 'What Works' within and across a small number of educational contexts. Results from two distinct groups are discussed, pre-service Teachers and Employees in a Small / Medium Enterprise (SME).

Keywords: LEGO SERIOUS PLAY, Education, Assessment, Research Methods

Introduction

LEGO® Serious Play™ (LSP) is well established as a business technique, it has been used widely in a number of commercial contexts such as telecoms and banking. However, although the basis of LSP is supported by many educational theories and practices, it has as yet seen little application in educational contexts. In this paper, LSP is described, along with a summary of its theoretical basis, with reference to larger bodies of literature which provide a richer analysis. The key components of this theoretical underpinning, which are supported by educational literature are explored further. The process of workshop design is then detailed. The execution of work-

shops is described, along with reflections and adaptations. Examples of the kinds of data collected are presented and analysed. Finally, recommendations for further development of the method are described in the context of an evaluation of LSP within an educational context.

The LSP Method

The LEGO® Serious Play™ (LSP) Method is one where participants use LEGO blocks as mediating artefacts to build symbolic or metaphorical representations of abstract concepts. In this way participants' conceptions of intangible thoughts and ideas can be concretised by a LEGO® Model. The sharing of such ideas through a physical representation allows them to be manipulated and positioned within a physical landscape which depicts how these ideas relate to those of other participants. This process provides a forum which facilitates rich discussion with other workshop participants. In general LSP, as envisioned by its leading developers, Roos, Victor and Rasmussen, is a workshop led by a facilitator, with between 6 and 10 participants, following a process of the facilitator Asking a Question, and the participants Building, Sharing and Reflecting. The workshop is guided by some simple rules:

- The builder owns the model
- The metaphor (symbolism) belongs to the builder
- Discussion is about the model

Some basic guidelines:

- Trust your hands
- Trust the process
- Everybody builds
- Everybody takes part

Each workshop follows the same process:

- Facilitator proposes a challenge
- Participants build
- Participants share
- Participants reflect

Theoretical underpinning

LEGO® Serious Play™ in its original form as developed by Johan Roos and Bart Victor of the International Institute for Management Development in Lausanne, and promoted by Robert Rasmussen, Director of Research and Development at the LEGO® Company, was shaped by psychological theories of learning, calling on ideas of; play, constructionism, flow, the Hand-Mind Connection, the use of metaphors and complex adaptive systems (beliefs) (Rasmussen Consulting, 2012). The LSP method was primarily developed in response to the need for a system to facilitate creativity and imagination for innovative and dynamic business strategies. These same theoretical frameworks have also been used in the educational domain where they have been adopted for what are arguably different purposes.

The idea of ‘play’ in education is well explored; it describes a process in which a person (most commonly a young child) learns to make sense of the world around them. This is resonant with the Piagetian (1936) view of constructivism which claims that a learner’s knowledge and meaning are ‘constructed’ through the interaction of their ideas and experiences. The Vygotskian (1978) perspective, in this context, holds that children learn to support previous learning and knowledge thorough play, and also gain new knowledge and understanding of slightly greater complexity within a ‘Zone of Proximal Development’ (ZPD). The fruitfulness of activities within this ZPD is echoed in Seymour Papert’s Idea of ‘Hard Fun’ (Papert, 2002), where activities are enjoyable, precisely because they are pitched at the right level of difficulty to maintain interest and engagement. More recent work around playing and games, looks to harness the motivational aspect of playing and games to engage learners (Kirriemuir & McFarlane, 2004). These approaches rely on creating environments which allow learners to engage with the play at a deep level (Jones, 1998). Malone (1980) highlights criteria for educational games which are aligned with achieving the Flow state described by Csikszentmihalyi (1975) which underpins the LSP method as developed by Roos, Victor and others subsequently. Papert (1986) also extends the idea of constructivism to one of Constructionism. In this, the belief that people learn by creating and testing mental models of the world around them, is extended to claim that this learning can be more effective if people are afforded the opportunity to create physical models in

the real world. Rasmussen (2012) discusses the idea of the close connection between the hand and the brain and makes the case that a large proportion of the brain is associated with controlling the hands. Whilst this idea is well supported by the image of the sensory homunculus, there is little to support that this connection results in a direct communication of knowledge or understanding. Nevertheless, there is a case to be made that the physical manipulation of objects, in the creation of mediating artefacts, exploits the close relationship of the hand and the mind.

The creation of these artefacts constitutes one part of the LSP process, the richness is not so much in the LEGO® bricks but in what they represent. It is the sharing and particularly the process reflection of LSP which allows deep insight. The value of reflective learning is well recognised in many domains and is not new. Dewey (1933) lays the foundations for the LSP process when he emphasises the importance of experience, interaction and reflection. Kolb (1984) reprises these ideas with his experiential learning cycle, utilising a process of experience, reflection, conceptualisation and testing of that concept. This process very much parallels the cycle of building, sharing and reflecting, found in a typical LSP workshop.

When reflecting on the development and application of LSP, there is a certain irony in the way LSP has enjoyed a measure of popularity and success in the commercial field, whilst being largely overlooked in the domain of education. The S-Play White Paper (Frick, Tardini & Cantoni, 2013), which provides a comprehensive review of the practice of LSP within Europe, largely describes cases where it has been used in a commercial context rather than an educational institution. There are of course a few exceptions (James, 2013; Nolan 2010). The basis for the LSP is strongly influenced by pedagogical theories and practice, yet LSP has not been embraced by the education community, except in the context of vocational education. The aim of the current work detailed here is to reclaim LSP practices for use in academic and pedagogical practice. The rest of this paper outlines the development of a series of LSP workshops with educational goals and describes the outcomes, findings and conclusions from the execution of these workshops in a variety of environments.

Developing LSP Workshops

The LSP workshops developed here, followed a procedure developed within the implementation of the S-Play - LEGO® Serious Play™ for

SMEs project¹. The S-Play project is funded by the European Union Lifelong Learning Programme (LLP)—Leonardo Da Vinci—Transfer of Innovation scheme. The Workshops were developed in ways which reflected the theoretical basis for LSP. They workshops were designed to encourage play, achieve a state of ‘Flow’ and to allow reflection, all of this through the process of building physical models with hands.

Early observations suggest that the process of building metaphorical representations of abstract concepts is not one which one can execute without at least some guidance. These LSP workshops all followed a similar format. The LEGO® part of the workshops commenced with a series of warm up tasks designed to take participants through from building (e.g. a Tower or a Duck), through building representations, to building analogies and metaphors.

Workshop Warm-up Procedure

First of all, participants were introduced to the goals of the workshop, for example:

- discuss teaching and learning with peers and identify good practice
 - explore and share their identity as a teacher and who they want to become
- or
- reflect on your role in the organisation
 - discuss development needs
 - identify characteristics of training strategies and explore how these relate to your own context

The theoretical basis for the LEGO® Serious Play™ approach was then explained, with varying degrees of detail depending on the audience. More academic participants generally preferred to hear a sound rationale supported by evidence before committing to the process. This commitment to the process was an essential requirement, as identified within the basic guidelines.

Following this, the rules, guidelines and steps were explained to participants. With the formalities complete, the LEGO® bricks were presented. Participants were given a few moments to (re)familiarise themselves with the bricks and play for a few moments. At this stage it was reinforced that

1. <http://www.s-play.eu>

the LSP process specified that play was an important component, that whilst the workshop had serious goals, the play component was essential.

The first step was for participants to become familiar with building and to start to play with the LEGO® bricks. To this end they were asked to build a free-standing tower. They were given two minutes to complete the task. The element of play was reinforced by introducing friendly competition with regard to the height of the tower, along with some commentary about progress of participants. After two minutes, the tallest tower is identified and celebrated. The purpose of this stage is reinforced for the participants, it is explained that all have learned how to build with LEGO® bricks. A second lesson is now introduced in which participants realise the attachment they have formed with their constructions and feel a slight loss at having to dismantle the towers they built.

The next stage is to introduce the process of building symbolic representations with LEGO® bricks. In this task participants are asked to build a model that represent themselves in some way. For many, this is their first experience of non-literal LEGO® modelling. On completion, participants are asked to explain to others how their model represents them. However, it can be useful in encouraging participants to assign symbolic significance to the models and reinforce the idea that models only have the meaning which is associated with them, this reinforces the rule that the symbolism belongs to the builder, and is often the most challenging stage. It is also at this stage where participants start the process of sharing and reflection. One variation of this task is to ask participants to move to a different model and explain how that one represents them. This approach deviates slightly from the LSP process, as it challenges the rule that the builder has ownership of the model and its meaning. However, it can be beneficial in encouraging more creative interpretation of the models and has precedents in storytelling and story sharing practices (Ohler, 2008).

Often by this stage participants are comfortable enough with the process to start building 'identity' models. If not, a further warm-up task may be used (e.g. Build a model of Monday Morning).

Method and Results

Beyond the warm-up phase, the workshops described here began to diverge. Three cases are presented. The first of these looked at pre-service primary school teachers, the second looks at pre-service secondary school

Mathematics teachers and the third looks at employees within the engineering department of a small manufacturing firm.

Pre-service Primary School Teachers

The participants in this workshop were trainee teachers. All had completed voluntary terms within primary schools prior to their training. Each of the students had at least some experience within primary schools as part of their Initial Teacher Training as well as some time spent as volunteers prior to their training. Participants were asked to build a model of 'Who you are as a teacher' furthermore, they were asked add a single small red brick to identify their greatest strength and write three phrases which characterised their models. Some results are shown below.



Figure 1: Pre-Service Primary Teachers' Teacher Identity

Pre-service Secondary School Mathematics Teachers

In this workshop, as before, the participants were pre-service teachers, with some class room experience. The main difference between this and the previous group was in the subject specialism and the age of the pupils which these participants were being trained to teach. Once again, participants were asked to build models of their identity. However, in this instance, with more time available.

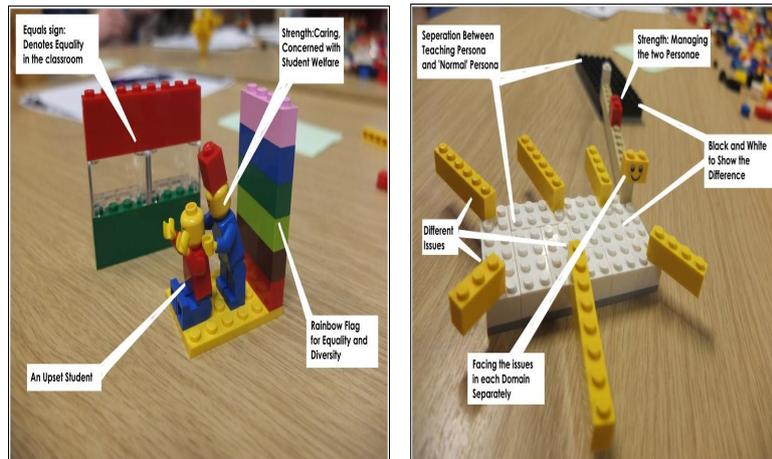


Figure 2: Pre – Service Secondary Mathematics Teachers' Teacher Identity

Participants were asked to build and share individual models of an ideal teacher then to build and share ideas of the kind of training which might move from their current identities towards their vision of the ideal teacher. These models were placed on a 'Landscape' Table with current models at one end, ideal models at the other and the training strategies in the centre. Participants were asked to cluster individual models, in terms of the ideas represented, to combine the individual ideas of the ideal teacher into one model which accommodated all the different views and to cluster the training models according to the kind of provision being represented. These processes required participants to discuss their models in detail and to listen to and reflect upon the ideas of others, so that a range of different views could be synthesised and represented as a single vision. Having completed this process, participants were invited to add connections to the landscape model. Each participant was asked to place a LEGO® Connections piece between one part of the self models and one part of the shared training model. They were then requested to place another connection between the shared training model and the shared model of the ideal teacher. In each case the participants were asked to make the connections between the components which represented the most important link between the parts of the landscape model. Participants were then asked to create a single joint

narrative which explained the model and included all components within the narrative. Illustrative examples of the results are shown below.

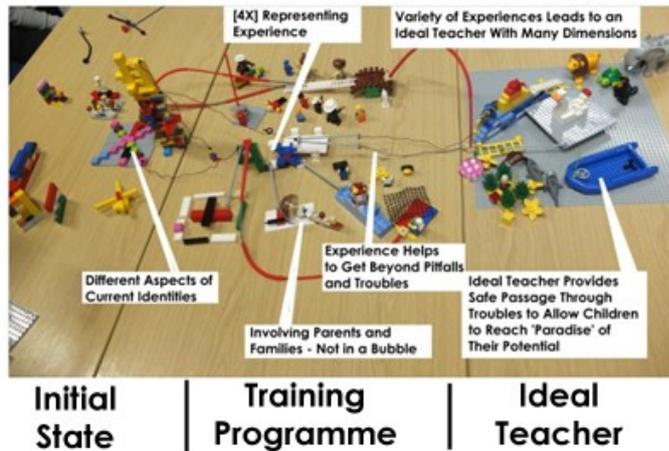


Figure 3: Pre-Service Secondary Mathematics Teachers' Shared Model

Employees in an Engineering SME

The participants in this workshop represented staff from all levels of the organisation except the CEO, from apprentices to Senior Management. The format of this work was very similar to the previous, with Pre-Service Mathematics teachers. Broadly, participants were asked to build how they saw their current roles, their desired future roles and some mechanism by which this could be achieved. The shared model task required that a single training strategy was modelled by combining individual models. Once again LEGO® Connections were used to identify key links between the stages of the model. Below we see a model of the aspirations of one of the apprentices and the 'final' landscape model of the current identity of the employees, their goals and a unified training strategy for the organisation to help them all to achieve that goal. Alongside this shared model, participants placed models which identified their perceptions of the barriers and enablers which will have impact on the implementation of the strategy.



Figure 4: SME Employees' Individual Aspiration and Shared Vision

Evaluation of the LSP Method in Educational contexts

At this stage, the point of the current study is not to analyse the results of the LSP workshops directly, but rather to reflect on the application of the process in educational contexts, in terms of learner identity and of identification of learner needs. The question which is often raised is whether or not LEGO® holds a special place in the implementation of the Serious Play™ method. Could any other mediating artefact serve as well as LEGO®? There is no fundamental aspect of the workshop design that restricts the mediating artefact to LEGO®. In principle, any medium which allows participants to express their understandings and conceptions in way which encourages play, sharing, flow and reflection would suffice. However, the workshops have demonstrated that, in the UK context, including international participants, LEGO® is a very familiar system. An emotional response of the participants can be observed when the LEGO® is introduced, usually a combination of excitement and nostalgia, which opens the door to

'play'. Whilst the same effect might arguably be achieved with other childhood materials such as modelling clay, the range of technical capability which can be demonstrated with such a medium may distract from the metaphorical and symbolic value of the models created. The method is based on symbols rather than close physical similarity. In this, LEGO® bricks generally afford a smaller range of technical expertise, with a high floor and a low ceiling. Models are not characterised by their technical or artistic qualities, but by what they represent.

The case could be made for other simpler and cheaper media, e.g. pen and paper, Fuzzy Felt or Collages. Whilst pen and paper suffer from the same problems of technical expertise as modelling clay, along with the other media, they are restricted to 2-dimensional modelling and don't provide the same close, manipulative connection as LEGO®.

In general, LEGO® may not be the only medium for such workshops. However, given that what is required is an easily manipulated mediating artefact which makes people smile and want to play, then LEGO® fits the bill nicely.

A certain amount of ramping is necessary, with some groups taking more easily to building symbolic representations than others. As such the range of warm-up activities should lead participants in small steps towards building metaphorical models. Groups more adept at such activities can skip a few steps.

The workshop design has thus far has proved to be successful. Even the most reticent of groups, some struggling initially to build representations of themselves, have achieved the end goals of building landscape models which represent a single narrative.

The sharing process of the workshops has been very effective. The focus on the models rather than individuals and the requirement for each person to share, creates a level playing field. Each participant has an equal voice, and as the builder, has ownership of its meaning. In this respect, everyone has equal time 'on the stage' and when on stage, their view is the only valid one and other participants must listen. Within a hierarchical organisation, this is one of the few times when all members have an equal voice and make an equal contribution to the discussion.

The iterative process built into the workshop supports reflection. Each stage of the building process is related to the previous and participants are given the opportunity to build their models in light of the views expressed

either by themselves or by other participants in the previous round. As the workshop progress participants are given and often take the opportunity to modify their models, adding richness to their meaning and expressing deeper insights.

The conclusion of the workshop comes with the joint narrative, as stated earlier all groups have managed to reach a consensus of a single coherent vision which encapsulates the views of often diverse group members. This is no small feat, as it is rare that groups of 6 or more people from different backgrounds or roles can agree on a single narrative which includes all their views. The mechanism, which allows this consensus is not yet clear. However, it is suggested that the equality of voice of the participants and the building of the shared narrative leads to individuals feeling that they have some ownership of the overall vision.

Concluding Remarks

The LSP workshops as presented here have produced very informative results. The LSP method is established and shown to have value within the commercial environment, particularly when focused on business strategies. The work presented here demonstrates that the LSP process can be effective in educational contexts, where individual goals are examined and synthesised to identify ways of meeting the learning needs of a group of individuals with separate but common aspirations. Despite varying initial responses, cautious reticence or immediate engagement, all participants reached the 'flow' state of effortless engagement by the time the central focus of the workshop was addressed. Future work in this area will be to develop LSP as an assessment tool, as a means to understanding people's conceptions of complex ideas, such as identity, or meta-cognition. At the moment, across disciplines, the internal validity of the LSP method is clear. In order to further develop LSP as a method within educational research, it is likely that work will need to be carried out to establish the external validity and value. This work need to make the case for the use of LSP as an educational tool. LEGO® is relatively expensive and can be time-consuming when compared to more conventional approaches such as discussions or a written piece. Further work needs to show that LSP can produce richer information than other current techniques. The results obtained within this study give cause for optimism in this domain.

Author's Brief Bio

Sean McCusker is a Research Fellow within the School of Education at the University of Durham in the UK. He has a background in Engineering with a Ph.D in Civil Engineering and having carried out post-doctoral work on Government-funded research projects in that field. Since moving to Education, he has led projects in Storytelling and ICT enabled learning. He has been involved in the development of new methods and approaches to education and has been applying creative ideas to adapt practices and techniques from a range of environments for use in education. He has worked on the development of curriculum materials for problem solving and materials for professional development in the light of new technologies and new educational goals. He is currently involved in various EU funded projects and has been a member of partnerships on various EU Lifelong Learning Projects over the years.

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7 PATRICIA DE ALMEIDA

**CULTURAL AND CREATIVE INDUSTRIES IN
EUROPE: THE WHERE, THE WHY AND THE HOW**

ABSTRACT In recent years the world has been moving at a faster pace. For Europe, as well as for other parts of the world, the rapid roll-out of new technologies and enlarged globalisation has meant a remarkable shift away from traditional manufacturing towards services and innovation. Creative communities whose fresh material is their ability to imagine, create and innovate are progressively replacing factory floors. In this new, global and digital economy, immaterial value gradually more decides material value, since customers are searching for fresh and inspiring experiences. Currently Europe's cultural and creative industries (CCI) are worldwide leaders and competitive exporters in an extensive array of arenas. CCI play a vital role in Europe's culture and identity, and are central to promoting Europe's individuality around the world. Furthermore they are an aggregate group of industries that in 2011 employed a total of 7,703,934 persons of the European labour market. In this paper, the main characteristics of CCI are discussed, and a mapping of the CCI in Europe is presented. Additionally, a research project aiming at identifying regional conditions that would allow explaining the higher concentration of CCI in particular regions is briefly presented.

Keywords: Cultural and Creative Industries, Creativity, Culture, Europe

Introduction

The wish to create things whose value is not entirely practical—things that are beautiful, that communicate cultural value through music, drama, entertainment and the visual arts, or that communicate social position

through style and fashion—is as old as human society itself. There have always been, and always will be, people with the imagination and talent to make and do these things. Their products and services are said to have an *expressive value*, a cultural significance that may bear little relationship to how much they cost to make.

In the XX century, these primordial traditions of cultural work—such as, designing, making, decorating and performing—began to be merged with a range of modern economic activities such as advertising, design, fashion and moving image media to create new forms of commercial culture. In the first decade of the XXI century these developments have been immensely amplified by the power and spread of digital technology. The industries responsible for these products are varied, yet they have certain features in common. Such industries earn their profits from the creative skills of their workforce and the generation of intellectual property, and collectively have come to be known as the *creative and cultural industries*.

Intellectual property is the catalyst that transforms cultural and creative activity into cultural and creative industry. It protects the creator's rights of ideas in the same way that other laws protect the right to the ownership of goods, land or buildings. It allows the creators of new products and processes to benefit from their creativity by providing a framework within which they can work.

Though, the cultural and creative industries do not work in isolation. They stand at the center of a web of connections with other industrial sectors, and are a source of innovation for the broader economy, particularly through advertising, design and branding. They also have an important role to play in urban regeneration and community cohesion. This wider web is often referred to as the creative economy.

It is also important to emphasize that the creative industries are important both to developed nations and developing ones. They matter to richer countries because they depend for their success on the creativity of their workforces and, as such, their competitiveness relies less on price than on the quality and imagination of their work. In turn, this suggests that they are less likely to lose out to the price-led competition which has caused many manufacturing and service jobs to be outsourced to emerging economies. However, the creative industries also offer potential benefits to emerging economies. These countries also often wish to move away from competing solely on price, and are looking to identify new sources of com-

petitive advantage and cultural recognition. Creative businesses, driven as they are by ideas and creativity, do not necessarily need access to large sums of capital or natural resources. For countries with rich cultures and a pool of local creative talent, the creative economy offers a way to build economic value.

The term *cultural and creative industries* (CCI) is relatively new and do not yet has a totally established definition. In this paper, the term cultural and creative industries is used according to the definition on the Report Entrepreneurial Dimension of the Cultural and Creative Industries¹:

Cultural industries are those industries producing and distributing goods or services which at the time they are developed are considered as a specific attribute, use or purpose, which embodies or conveys cultural expressions, irrespective of the commercial value they may have. These include the core arts such as performing arts, visual arts, as well as film, DVD and video, TV and radio, games, new media, music, books and press. Creative industries are those industries which use culture as an input but whose outputs are mainly functional. This classification includes design, fashion, advertising and architecture².

Characteristics of the cultural and creative industries

CCI have characteristics that are noticeably different from other industries. The Report on the Entrepreneurial Dimension of the Cultural and Creative Industries¹ identifies three features that contribute to the markedly distinct character of CCI:

- Size of CCI enterprises
- Characteristics of the CCI labour market
- Characteristics of the CCI enterprise processes

Size of CCI enterprises

The majority of CCI are very small enterprises. Around 80% of enterprises in the CCI consist of SMEs with many sole traders or micro-SMEs employing only a handful of people (Bellini, Crombie, Hagoort, Ioannidis, Koy-mann & Arezzo, 2014). Actually, CCI workers are more than twice as likely to be self-employed as the whole economy average. Still, although

1. http://ec.europa.eu/culture/documents/edcci_report.pdf; also in
2. EU Commission (2010): Green paper. Unlocking the potential of cultural and creative industries, page

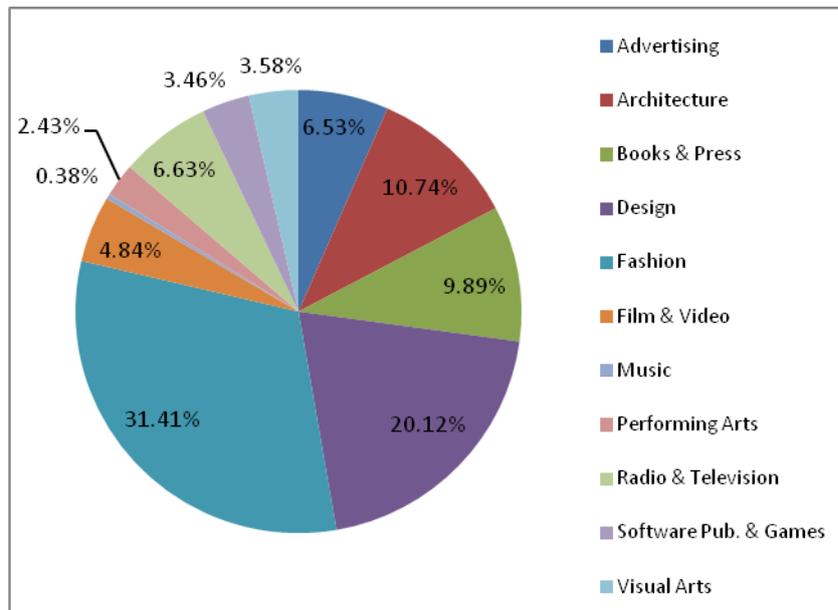
the vast majority of CCI are micro-enterprises (less than 10 employees), they are responsible for only a modest percentage of the total turnover of the CCI (18%). In fact, within the majority of micro-enterprises almost 60% are very small businesses with only 1 to 3 employees (Bellini et al., 2014). The Report on the Entrepreneurial Dimension of the Cultural and Creative Industries¹ confirms that the vast majority of CCI enterprises are very small micro-SMEs. The number of large-scale enterprises is marginal, at less than 1%, but they are responsible for more than 40% of the annual turnover. In the CCI sector medium size enterprises are almost absent.

Characteristics of the CCI labour market

CCI workers are far more likely to hold non-conventional forms of employment, such as part-time jobs, temporary contracts and freelancing, than the workforce in general (Benhamou, 2003). In most CCI sectors, full-time workers receiving regular pay are in the minority (Throsby, 2001). Multiple job-holding is usual, as the CCI workers need a minimum income for survival and some degree of financial security. Most CCI workers change frequently their job and work on short term contracts (Bellini et al., 2014). Due to the low recognition of their intangible creations, some cultural and creative workers combine their freelancing activities with other activities that offer the needed financial stability to sustain these creative activities:

“The cultural sector is characterised by a high share of freelancers and very small companies. A new type of employer is emerging in the form of the entrepreneurial individual or entrepreneurial cultural worker, who no longer fits into previously typical patterns of full-time professions.” (MKW Wirtschaftsforschung GmbH, 2001).

It is also important to emphasise the diversity of the backgrounds of the CCI workers (certification by degree, vocational training, experience acquired through internship, etc). This diversity creates some difficulties when recognising or certifying the quality and reputation of CCI entrepreneurs. According to Towse (2003), this will make the position of an employer in the Arts particularly difficult, due to the lack of information and quality criteria.



Picture 1: Percentage of employees per CCI sector

Source: *The Entrepreneurial Dimension of the Cultural and Creative Industries Report*

According to *The Entrepreneurial Dimension of the Cultural and Creative Industries*, and as represent on Picture 1, the sectors that employ a larger number of workers are: Fashion (31.41%), Design (20.12%), Architecture (10.74%) and Book & Press (9.89%).

As mentioned previously, many cultural and creative workers are also employed in other sectors, contributing to the development of the creative capacity of non CCI companies.

Characteristics of the CCI enterprise processes

As highlighted by O'Connor (2009, p. 63), the function of artistic, creative, or intangible labour is not confined to traditional questions of creatives in industrialised culture industries, but is a part of a much wider group of activities. For this reason debates around the creative sector have become so central. CCI are usually grouped in four clusters. In Table 1 these clusters are presented, as well as their main characteristics.

Type of cluster	Sectors	Main characteristics
Creative service providers	Design, architecture, new media, advertising	Direct interaction with user's demand Exchange of time for IP products Highly influenced by technology and digitisation Mostly project-based Mostly private or self-financing
Creative content providers	TV and radio, fashion, games, music, film, books	Producers of IP product Highly influenced by digitisation, mostly for "creation" and user-interaction Mostly project-based Mix of self-financed and subsidised sectors (audio-visual and games, books) Experience threats of piracy from digital market and peer to peer exchange
Creative experience providers Creative original providers	Performing arts, visual arts, (music, games)	No initial ownership of work and usually pay for other's copyright Mostly subsidised and concerned by the cultural value of their work Arts are mostly on contract basis Digitisation is mostly for dissemination and as communication tools Usually one off products and services

Table 1: Clusters in the CCI and their characteristics

Source: *The Entrepreneurial Dimension of the Cultural and Creative Industries Report*

an innovative path to respond to these challenges by building upon one of Europe's key strengths, its talented and diverse creative population (European Commission, 2010).

The impact of culture and creativity has attracted much attention in fostering and revealing the potential of a European creative economy. The enlarged focus on the cultural and the creative sector has resulted in many studies undertaken, for instance, by United Nations³, UNDP & UNESCO (2013), NESTA⁴, KEA⁵, the Expert Group on CCI⁶, the European Creative Industries Alliance⁷, and the European Cluster Observatory⁸. These studies highlighted the critical impact of CCI on growth and employment (European Cluster Observatory, 2010), and acknowledged their great economic, social, cultural and innovative potential. CCI act as important drivers of economic and social innovation within the sector, but also outside the CCI sector (European Commission Green Paper, 2010), contributing to Europe's strengths in times of challenges. With imaginative solutions such as the integration of user-centred approaches, the development and use of ICT, the design of new services for bigger social inclusion, CCI subsidize to promote dynamic changes in the economy as well as contributing to broader cultural diversity⁹.

With new processes, products and services, CCI may provide innovative input for other sectors of the economy (ECCE Innovation, 2009). As innovation is now acknowledged as including more than just technological and scientific changes (European Commission, 2010), the CCI offer the opportunity to bring essential change in non-technological innovation products, services and processes, contributing to a more inventive Europe. Other factors, such as globalization and the digital shift have opened opportunities and enabled greater cultural diversity and are drivers of further development for the CCI (European Commission Green Paper, 2010).

The CCI have developed considerably over the past years, contributing to around 2.6% of the EU GDP in 2008¹⁰, over 3% of GDP in 2010 (European Commission, 2010) and creating substantial employment. In 2009, CCI employed a total of 6.4 million persons in 30 European countries (European Cluster Observatory, 2011), in 2010 over 6.7 million persons (European Commission, 2010), and in 2011 CCI employed more than 7.7 million persons of the European labour market. Furthermore, CCI maintain and develop Europe's cultural diversity, which is also important in terms of social inclusion. Looking at the place of CCI in member states'

national policies, they play an ever-increasing role in terms of providing content as well as services and innovative spill-overs¹¹. Thus, it is fundamental to have a deeper understanding of the complexity of CCI and the way they are influencing and altering the environment in which are located, as well as it is fundamental do know how they are influenced and altered by that environment.

Distribution of CCI in Europe

As reported by the European Cluster Observatory (2011), the biggest concentrations of CCI employees in Europe are major urban areas, as shown on Table 2 (on page 105). This finding confirms what literature has been suggesting, that CCI are concentrated in large urban zones. Moreover, literature also suggests that the concentration of ‘creative people’ in a certain region will attract more ‘creative people’ creating a snowball effect. Naturally, creativity and cultural innovation take place in numerous different types of regions across Europe but it seems that large scale industrialization of these activities occurs in large urbanized regions.

LQ is an indicator of CCI employment relative to the total employment of the region, where $LQ > 1$ indicates an overrepresentation of CCI employment. Adapted from: European Cluster Observatory (2011)

Table 2 (page 105) shows that 21 out of the 25 largest employment clusters have an overrepresentation of CCI employment. Although we can recognize a relationship between CCI and large urban regions this is not a ‘rule’. Though many of Europe’s most populated regions encompass highly ranked CCI clusters, some of the largest regions are lagging in CCI employment, as shown in Table 3 (page 106).

Among the regions of Europe which rank on the top 25 either by population or CCI employment, the following cities host an over-representation of the creative and cultural sector: Amsterdam, Berlin, Frankfurt, Brighton, Budapest, The Hague, Lisboa, Inner London, Oxford, and Stockholm. On the other hand, of the regions with the 25 largest populations the following have a far lower than expected representation of creative and cultural industries: Bari, Düsseldorf, Ireland, Katowice, Lyon, Marseille, Naples, Palermo, Valencia, Warszawa. As with many industrial sectors, CCI are not evenly distributed and this indicates the existence of regional industrial and innovation systems and clusters strengthened by favorable regional conditions.

Employment and competitiveness in the CCI are not directly related to labor market size or population and cannot be considered a simple product of human inhabitation. CCI are knowledge driven industries that are drawn to specialized labor markets and to clusters (European Cluster Observatory, 2011).

Concluding remarks

At this moment it is crucial to identify and characterize the Europe's top regions for creative and cultural industries, ultimately aiming at finding some regional conditions that would allow explaining the higher concentration of CCI in those regions. We propose to develop a qualitative and quantitative research project: a documentary analysis is being conducted aiming at studying historical, geographical and social characteristics of these regions, complemented by a quantitative analysis. Regarding the quantitative analysis, our aim is to characterise some of the European regions with high concentrations of CCI taking into consideration region indicators, such as, life satisfaction rate, lifelong learning, skilled migrants, and population aged 15-34.

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NOTES

3. <http://unctad.org/en/Pages/DITC/CreativeEconomy/Creative-Economy-Programme.aspx>
4. <http://nesta.org.uk/publications>
5. <http://www.keanet.eu/publications/>
6. http://ec.europa.eu/culture/our-policy-development/doc2240_en.htm
7. <http://www.eciaplatform.eu/publications/>
8. <http://www.clusterobservatory.eu/index.html>
9. http://ec.europa.eu/culture/documents/edcci_report.pdf
10. http://ec.europa.eu/culture/documents/edcci_report.pdf
11. An example of a national initiative concerning Cultural and Creative Industries: <http://www.gepac.gov.pt/cultura-2020/knowledge-for-growth-understanding-and-measuring-cultures-impacts.aspx>

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Appendices of Tables

Region name	Country	CCI rank	CCI employment	CCI LQ
Île de France (Paris)	France	1	279361	1.72
Inner London	UK	2	239983	2.77
Lombardia (Milan)	Italy	3	175580	1.31
Madrid	Spain	4	164269	1.65
Cataluña (Barcelona)	Spain	5	139278	1.26
Lazio (Rome)	Italy	6	113531	1.97
Danmark	Danmark	7	98866	1.17
Oberbayern (München)	Germany	8	94178	1.57
Attiki (Athens)	Greece	9	88195	1.47
Outer London	UK	10	86884	1.43
Kozep-Magyarország (Budapest)	Hungary	11	79281	1.76
Zuid-Holland	Netherlands	12	78183	1.44
Berks, Bucks and Oxon (Oxford)	UK	13	76097	1.90
Noord-Holland (Amsterdam)	Netherlands	14	74685	1.80
Andalucía (Sevilla)	Spain	15	70914	0.68
Köln	Germany	16	68825	1.37
Stockholm	Sweden	17	68212	2.87
Lisboa	Portugal	18	67929	1.35
Berlin	Germany	19	66051	1.70
Veneto	Italy	20	61285	0.94
Niedersachsen	Germany	21	59486	0.68
Darmstadt (Hanover)	Germany	22	58965	1.15
Piemonte	Italy	23	58068	1.09
Emilia-Romagna	Italy	24	58029	0.95
Surrey, E and W Sussex	UK	25	57837	1.40

Table 2: Europe's top 25 regions for creative and cultural industries employment clusters

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Region name	Principal city	Population rank	CCI rank
Île de France, FR	Paris	1	1
Lombardia, IT	Milan	2	3
Andalucía, SP	Sevilla	3	15
Niedersachsen, DE	Hanover	4	21
Cataluña, SP	Barcelona	5	5
Madrid, ES	Madrid	6	4
Rhône-Alpes, FR	Lyon	7	40
Campania, IT	Napoles	8	54
Lazio, IT	Rome	9	6
Danmark	Danmark	10	7
Düsseldorf, DE	Düsseldorf	11	26
Mazowieckie, PL	Warszawa	12	39
Sicilia, IT	Palermo	13	72
Valencia, ES	Valencia	14	30
Provence-Alpes-Côte d'Azur, FR	Marseille	15	59
Veneto, IT	Venice	16	20
Slaskie, PL	Katowice	17	138
Outer London, UK	-	18	10
Ireland	-	19	33
Piemonte, IT	Turin	20	23
Köln, DE	Köln	21	16
Oberbayern, DE	München	22	8
Emilia-Romagna, IT	Bologna	23	24
Puglia, IT	Bari	24	78
Attiki, GR	Athens	25	9
Darmstadt, DE	Frankfurt am Main	29	22
Zuid-Holland, NL	The Hague	35	12
Berlin, DE	Berlin	36	19
Inner London, UK	London	43	2
Közep-Magyarország, HU	Budapest	44	11
Lisboa, PT	Lisboa	49	18
Noord-Holland, NL	Amsterdam	54	14
Surrey, E and W Sussex, UK	Brighton	55	25
Berks, Bucks and Oxon, UK	Oxford	79	13
Stockholm, SE	Stockholm	92	17

Table 3: Regions which rank in the top 25 either by regional population size or creative and cultural industries employment CCI rank is the rank in CCI employment. Adapted from: European Cluster Observatory (2011) 107

8 MAJID MAHMOOD

UTILIZING PROJECT MANAGEMENT TO STARTUP A COMPANY IN THE IT INDUSTRY

ABSTRACT The problem of literature exists in the inter-relation of the 2 fields of Project management and Entrepreneurship. A lot of research is being done in the field of entrepreneurship and project management but not in a co-linear or relational methodology. The problem that is being analyzed by this research is how to implement the principles of project management to the concept of starting a new business. The finding for this research was the implementation of WinWin Sprial model to starting a new company and sustaining it using the WinWin Spiral model.

Keyword: Entrepreneurship, Project management, project management for entrepreneurship, business creation

Introduction

The new age of business, entrepreneurship is an important aspect that has a lot of advantages. According to Acs, Arenius, Hay and Minniti (2004), entrepreneurship has a lot of advantages including job creation, national economic growth because of the export that is being done. The paper structure is defined in the way that the theoretical concepts in entrepreneurship, project management are explained first and later on the procedure of starting a company is defined. This leads to the explanation of the proposed framework to highlight the connection between Project Management and Entrepreneurship.

What is Entrepreneurship?

A number of studies has been done on the field of entrepreneurship; however, there remain a lack of a proper definitive definition for it. Gedeon

(2010) has compiled a list of definitions he considers as prominent or widely used in the literature. Entrepreneurship according to Draheim (1972), is the act of founding a new company where none existed before. Vesper (1982) defines loosely entrepreneurship as “the creation of new business enterprises by individuals or small groups.” Lumpkin and Dess (1996) defines it as a “new entity” or an orientation refers to the processes, practices, and decision-making activities that lead to new entry. Gartner (1990) defines entrepreneurship as the process by which new organizations come into existence.

Given these diverse definitions of entrepreneurship, a common thing can be noticed in them which is the *creation of a new venture/company/organization* for different reasons including profits, etc. However another interesting aspect of notice is not every company succeeds or makes profits. Ventures close down as well because of the losses they are making and eventually are left with no liquid capital. As Richtermeyer (2003) said that the field of entrepreneurship is continuously evolving and expanding. This is because the dimensions of entrepreneurship are constantly changing. One example lies in the deployment of internet and companies moving online for a more globalized business approach which leads them to make more money without having to invest money heavily in the development of ventures on land foreign to their corporation nationality.

Entrepreneurship in information technology is much different from traditional entrepreneurship. The reason being it can be innovative or imitative entrepreneurship. Innovation in this context could be characterised as being when a new solution is devised for which no other solution exists. In innovation there is a less chance that competitors would exist but another aspect might be that the clients might have to be trained that the solution is one of their needs. Imitation is when there is an already existent solution, its replica is made but in a different manner to portray differently. Imitation might necessary not be an exact replica. But with imitation there are competitors already existent in the business field.

What is Project Management?

Atkinson (1999) quotes Olsen (1971) defines project management as “the application of a collection of tools and techniques—such as the CPM and matrix organization—to direct the use of diverse resources toward the

accomplishment of a unique, complex, one-time task within time, cost and quality constraints. Each task requires a particular mix of these tools and techniques structured to fit the task environment and life cycle (from conception to completion) of the task". Kuura (2012) refers to the development of contemporary project management came into the being in 1950s which means people started using basic project management in that era. There is a lot of literature on the project management and how project management was developed. Project management varies differently for different industries and different types of projects even though with a basic framework being almost the same.

Shrnhur (1997) defines project success dimensions by defining 3 levels, meeting design goals, impact on the customer and benefits to the organization which further can be divided into meeting the operational specification, time goal, budget goals, and meeting technical specifications. If these are not met, the project is most likely to fail and leading to a case where there is no benefit to the organization.

Project Life cycle

According to Field and Keller (1998), Buchanan and Boddy (1992) defines a project as "A project is a unique venture with a beginning and an end, conducted by people to meet established goals with parameters of cost, schedule and quality". There are a lot of other valid definitions that hold true for the word project each with a different explanation of the word project. A project can be considered unique or a further extension of a previous project. In order to handle projects, a lot of project life cycles have been research upon and documented.

Other authors like, Schwalbe (2010) define a project as "a temporary endeavor undertaken to create a unique product, service or result." The noticeable thing between the two definitions is that each of them refers to the project having an ending with the passage of time, let alone the aspect of the project is completed successfully or the project is failed. The most important thing from the definition is the concept that projects are done by people. This implies there has to be a realization of the project requirement otherwise there is a chance that no project will be done.

Similar to this, a lot of research has been done on project life cycles and a variety of different cycles have been created, each with a different set of focus of industry, or type of project. Kendrick (2013) defines the project

life cycle as a linear project with the project starting and moving towards a requirement and planning which is further refined, designed then developed and at the end tested before the project is ended. In such a model processes are normally not interpreted and changes are hard to make during the project.

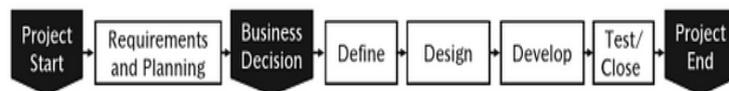


Figure 1: A typical Project life cycle for development projects, Adapted from- Kendrick, Tom- The Project Management tool kit- Page 143

Another model for project management is the Boehm (1998) defined Win-Win Spiral Model that uses a cyclic methodology for the successful execution of complex projects. In a WinWin Spiral model, there are 4 activities in each stage of the cycle in the project life cycle—as follow:

- Elaborate the process, objectives and constraints
- Evaluate the process with respect to the objectives and identifying the major source of product risk.
- Elaborate the definition of process
- Plan the next cycle

The purpose of dividing these stages into cycles helps the projects completed more efficiently and effectively. Another impression can be if there is a likelihood that the project is going to fail or is not going to perform as expected, the project can be closed before it utilizes the resources like money and labor in a negative manner.

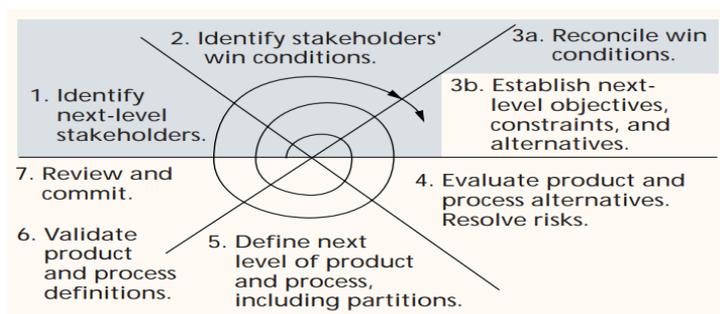


Figure 2: Adapted from Boehm, Barry, et al. "Using the WinWin spiral model: a case study." IEEE Computer 31.7 (1998): 33-44.

An interesting aspect is the concept of projects is, there are deliverables after a phase of a project is completed. The Project Management Institute Inc (2001) defines a few of the deliverables as Project Charter, Project Management Plan, Resource Requirement, Work Breakdown Structure, Budget Planning, Risk planning, Stakeholders list and Quality assurance. These documents are developed with passing time and progress in the project. These documents tend to help when the project is being upgraded or being run in a spiral model.

Starting a business

Even though the procedure for starting a business varies from country to country but in a very general overview, Gibb (1982), Allan describes the steps as mentioned in Figure 3. Rather than talking about the legal aspects which is just one of the activities in the business initiation. The most important thing in order to start a business is acquiring motivation and finding a business idea. But not every idea is a million dollar idea. Ideas can be validated and a lot of research has been done by prominent management gurus on how to validate a business idea whether it has a possible business potential or no. Kim and Renée (2000) proposes the 3 tools of validating a business idea are “the buyer utility map”, “the price corridor of mass” and “the business model guide”. These concepts let one know if there is a possible potential in an idea or whether at the end of the day it might be unrealistic and not possible.



Figure 3 Stages of starting a business- Adapted from Gibb, Allan, and John Ritchie. "Understanding the process of starting small businesses." *International Small Business Journal* 1.1 (1982): 26-45.

After an idea is validated, the business needs to be registered and all the legal paper works needs to be done which results into a registered entity which is ready to do business. Then comes the most important stage of the survival, because survival of a business plays an important role. If the business is not kept to survive, the company will make no money and most likely fail eventually leading to the company closure. Documentation is

needed for the business as well, and two of the most important documents include the business plan and business model canvas. A lot of extensive research has been done. Sahlman (1997) explains the ways how to write a successful business plan with things including the people, the opportunity, the context and risk/rewards. A business plan is a comprehensive document explaining almost everything about the business plan. Similarly, Osterwalder's (2008), Business model canvas can be used to create a pictorial analysis of the business idea including 9 basic building blocks which summarize almost everything about the business.

Implementation of project life cycle on starting of a new company

The part of research that is meant to indicate how the interrelation can be drawn between project management and the starting of a new business (Entrepreneurship), an application of the project management methodology was needed to be applied to the process of starting a new business. The model was derived from the basic spiral model of Project management and is illustrated in Figure 4 Project Management in Entrepreneurship (page 16). The spiral was divided into 8 stages in one cycle and the cycle is repeated with the progress of time but each time with a difference. The cycle starts with a specification, motivation that means an individual realizing the fact that there is an opportunity for a business. After realizing about the business opportunity is the next stage of planning where there is a business plan, or documented specifications in the form of a requirement document, a business plan and a business model canvas. The project charter will be the business plan. After that, the business idea needs to be validated, and validation can be done from the methods mentioned by (Chan and Mauborgne, 2000) which can be used to validate a business idea. In an Information Technology company, resources include human resource, technology resource, land resource, etc. Most important being the human resources which include developers, designers, marketing and management people. The roles need to be defined here that what resource will do what and how will the human resources be compensated. Other aspect of resource is the technological resource planning like the number of machines that would have to be planned. The budget planning needs to be done as well and the source budgeting needs to be done. The budget definition also needs to

identify where will the business funded from, whether an investment exists, or no. After the resource identification, in the first cycle comes the negotiation (or execution) of the business. By execution, the meaning of legally registering the business, starting to build a prototype if the company is going to offer a product otherwise building a portfolio and coming up with services that the business will offer. After going through the legal matters of registration, the legal permissions are granted from the governmental authorities that the business is legally registered. This makes the company move towards the birth and survival which means the making money, getting clients/people to use products or offering those people services. After this stage comes the profit analysis which means to analyze how was the company launch and the profit that is being made. If the idea is sustainable and a profitable one it will definitely be showing a possibility of profit if not had a break even yet. While analyzing the profits, there would be lessons learnt that can be used later. Things that can be done and others which cannot be done. They need to be documented as well such that it will help in the future. The last step is the future planning, which includes what are the possibilities for the next phase of the business which needs to be documented as well.

Businesses would not stop on the first cycle, businesses are meant to be sustainable and grow with time eventually making higher profits. After completion of the first cycle, the second cycle would include the expansion of the business or the other case being converting the business model to make it profitable given it is not making any money. From the end of the first cycle, the business knows what can be done in the future or possibility a spark was generated because of a possible chance, which than is the motivation for the extension of the business. That motivation is documented in the business plan as an update which is then validated and the cycle continues towards the development of that possibility of extension of the business. Each time a new motivation comes, this cycle can be revived and follow applying the spiral cycle of project management and giving rise to a new business.

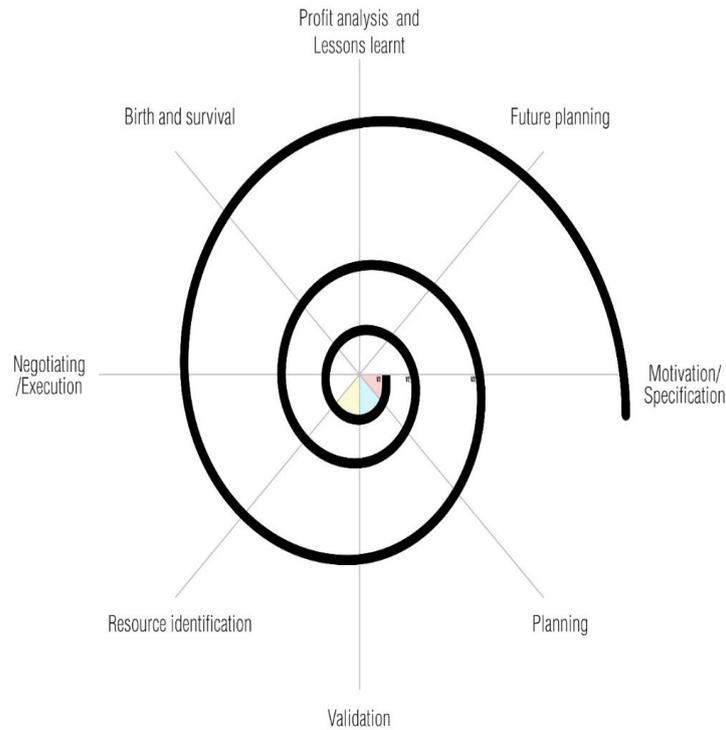


Figure 4: Project Management in Entrepreneurship

Conclusion

The two domains of project management and entrepreneurship have a great domain of knowledge available and a lot of research has already been done and is being done. However the need of an interconnection with respect to each other is also essentially becoming important as more entrepreneurs are coming and the domain of starting new businesses is dramatically changing. In this era, IT companies are being formed more easily and more profits are being made from them. The research suggested a possible methodology that can be followed for launching an IT company using a Project Management model. Further research is highly recommended to enhance the overall concept. By undertaking further research, I would be develop-

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ing more frameworks and mathematical models for the interrelation of Project Management and Entrepreneurship.

Author's Brief Bio

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9 RITA STRODE

PRELIMINARY ANALYSIS OF BACKPACKER MARKET SUPPLY

ABSTRACT. This research paper aims to carry out the preliminary analysis of existing backpacker market supply and understand the opportunities how to improve it. Some significant studies serve as proof, that the backpacker segment provides great value. Although in many countries are working on the research and application of appropriate marketing activities, there is still present the stereotype, that it is unattractive market segment and therefore is not used the advantages of work with backpacker tourists. The main findings in this research showed, that there exists demand for backpacker hostels services. Riga is visited by backpacker tourists and there are some hostels, who work directly with this target group, but at the same time there is lack of awareness about these tourists and there is not well enough developed co-operation between commercial sector representatives by making binding offers, that could affect also backpacker's period of stay.

Key words: backpacker, tourism, co-operation

Introduction

1970s self-organized tourists were perceived as unattractive market segment. But over time picture of backpacker tourists has changed and market participants are becoming more interested in backpackers. In this article, the differences between backpackers and mainstream tourists that makes this market segment attractive are examined. These differences should be taken into account, when market participants forms they offers for back-

packers. Firstly, they plan their trip differently - there is no specific travel plan, they realize ideas spontaneously, flexibly capture changes. Secondly, although backpackers tend to spend less for accommodation, they are also more inclined to see, to experience, to enjoy; so much money is spent on such activities, which gives them satisfaction for their main motivation—experience something different (Pearce, Murphy and Brymer, 2009). Thirdly, they spend more, thanks to the fact of staying longer—a longer length of stay means possibility for money consuming in a wider geographical area, which gives potential for local spatial development perspective. Market participants should take these differences as the advantages rather than disadvantages.

There are no available statistics on a particular segment of tourists in Latvia. Based on fact, that backpackers typical accommodation choice are hostels, several calls (in total 32) were made and respondents, were invited to participate in telephone survey. Only 18 hostels, were included in survey analysis (56%).

This pilot study was conducted in order to identify the existence of backpacker tourist segment in Latvia and find out whether the commercial enterprises co-operate to make suitable offers for backpackers.

Telephone survey results showed that the owners of the hostels are interested in this group of customers; there exists demand for their services, which is indicated also by the fact that for some respondents work with the backpacker tourists is their principal activity.

As the hostels are the place, where could be made offers for time spending several times, it is important to explore, whether they implement separate work with backpackers. Suitable offer could affect longer period of stay in Latvia.

Mainly respondents linked cooperation with other enterprises as information placement in websites about their hostel offers, although it could attract backpacker to choose specific hostel, it does not offer the time spending opportunities, which could promote backpackers to stay longer.

Currently there are no studies, which have explored how the cooperation between hostels and service providers should be realized to contribute for backpackers to stay longer and travel in a wider geographical area. At the same time it is clear, that to extend the backpackers period of stay within the one country, it is necessary to meet their needs, which is not limited with finding accommodation.

Research results and discussion

Although backpackers use also other kind of accommodations, the typical place to stay are hostels, therefore to find out whether Riga is visited by backpackers, were made several calls to hostels and telephone survey was conducted. The main accent was made to:

- Determine whether their clients are backpacker tourists by providing a definition for a given trial, what was considered a backpacker tourist.
- To reveal, is there established cooperation with other providers of goods and services, which is important to promote the backpacker tourist satisfaction, because for them is also important time spending activities, not just a place of stay, therefore it is possibility to extend their period of stay with attractive offer.
- Understand whether the respondents see the value and the need to obtain information about these tourists.

In total to 32 hostels in Riga where made calls and respondents, where invited to participate in survey. Only 18 hostels, where included in this survey analysis (56%). Other participants were not included, because for long time period they did not responded to invitation, did not want to participate in the study. Some respondents did not understand what are backpackers, however the founded backpackers review about some of hostels in the internet, confirmed, that between their clients are backpackers, which means that the ambitious work with this group is not possible, because without knowing, who is your client it is unable to meet his needs.

Results of this survey showed (table 1, page 124), that respondents, who agreed participate in this survey knew, who are backpackers as these tourists are their clients. Owners of the hostels are interested in this group of customers; on the one hand there exists demand for their services that is indicated also by the fact, that for some respondents work with the backpacker tourists is their principal activity. On the other hand there exists also the supply. One of the issues which are important to explore further is—does existing supply meets demand.

61 % of respondents told, that they co-operate with other enterprises to make offers for this tourist group, but from their comments

could be made conclusions, that there are two ways of co-operation, that is realized—one, that promotes offer to stay in particular hostel and one, that offers for backpackers time spending activities.

Respondent linked cooperation with other enterprises mainly as information placement in websites about their hostel offers, which of course contributes to the offer the intensity of the host place, but it does not offer the expression of time spending opportunities, which could promote backpackers to stay longer in specific country. The interesting fact is that, respondents, who thought, that for them would be useful to gain additional information about backpackers, also said, that they would like to increase its customer base. From the marketing perspective, there are two ways of enhancing the companies' income: by attracting new clients, and working with existing, loyal clients.

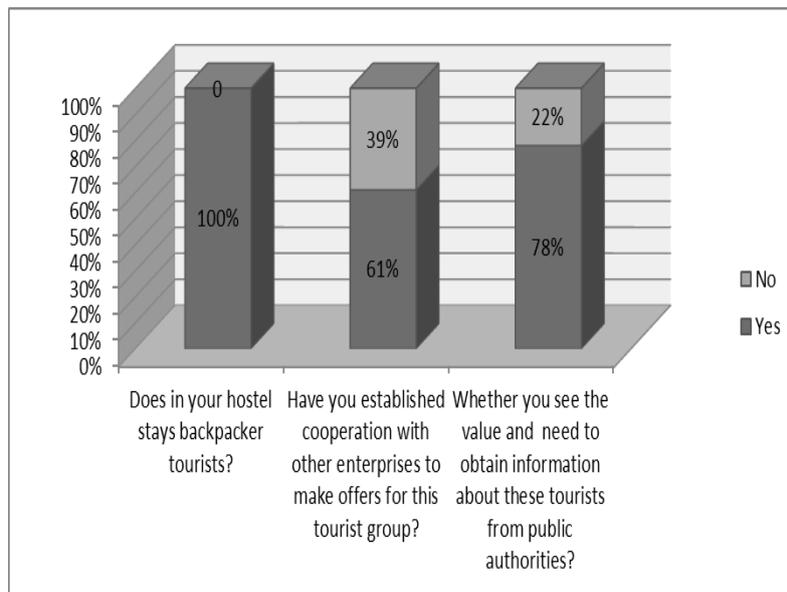


Table 1: Riga's hostel respondents given answers in conducted telephone survey 2013

Source: author's calculations based on telephone survey results

In the literature, it is mentioned that attracting new customers is usually more expensive than working with an existing one (Kotler P., Keller K., L. 2012), therefore it is more preferable to work with those tourists, who have already arrived in the hostel, than to focus on new customer attraction.

As in each country varies the activities in which could be interested the backpackers due to its individual differences, it is difficult to determine what types of offers would be seen as more attractive from backpackers exactly in Latvia as there is no research made, which would address these questions, in contrast with other countries. Although from made research studies may be inferred that there are some common features in relation to what activities backpackers are interested in (Scheyvens R., 2002 and P. L. Pearce, L. Murphy and E. Brymer, 2009). It appears that backpacker tourists use different types of services and engage in diverse activities, which means that the co-operation could be developed with different range of service providers in order to promote satisfaction for backpackers and long stay.

As the backpackers act spontaneously and their trip is not entirely planned, it is possible to affect their choice to stay longer, which is opposite to mainstream tourists.

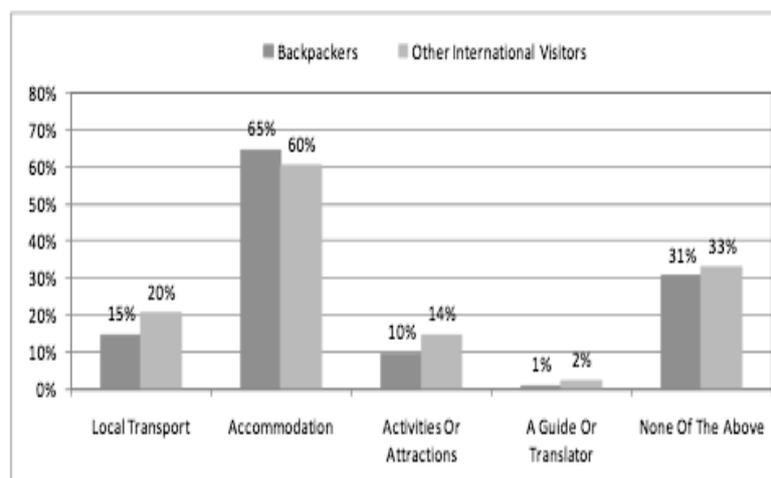


Table 2 : Backpacker booking frequency before the arrival in the New Zealand
Source: Angus & Associates. Quarterly Focus: the international Backpacker Market, 2011.

Backpackers behaviour concerning booking frequency shows, that only accommodation is booked by most of backpackers before they arrive in destination. For example in New Zealand (Table 2) 65 % of backpackers book the accommodation, only 10 % book the activities or attractions, before they arrive in New Zealand. At the same time the main backpacker motives are experience something different, develop knowledge of place visited, which means, that most activities are chosen, when backpacker arrives in the each travel destination (P. L. Pearce, L. Murphy and E. Brymer, 2009). 31 % of backpackers don't make any reservations of above mentioned positions, which give the advantage to affect their period of stay as they are not limited with use of the services in specified periods of time for which they already paid.

The main point is that backpacker does not come to Latvia to stay just at hostel or other accommodation; therefore to extend their period of stay, it is necessary to cooperate with service providers, that satisfy the backpacker needs. Based on the results of the study and backpacker characteristics in literature (Nash R., Thyne M., Davies S. 2006, P. L. Pearce, L. Murphy and E. Brymer, 2009, Scheyvens R., 2002), in Figure 1 is showed, the existing co-operation between hostels and other service providers and their possible effect on backpacker period of stay. The co-operation between hostels in Riga and hostels in other regions as well as other service providers, could promote also money consuming in a wider geographical area.

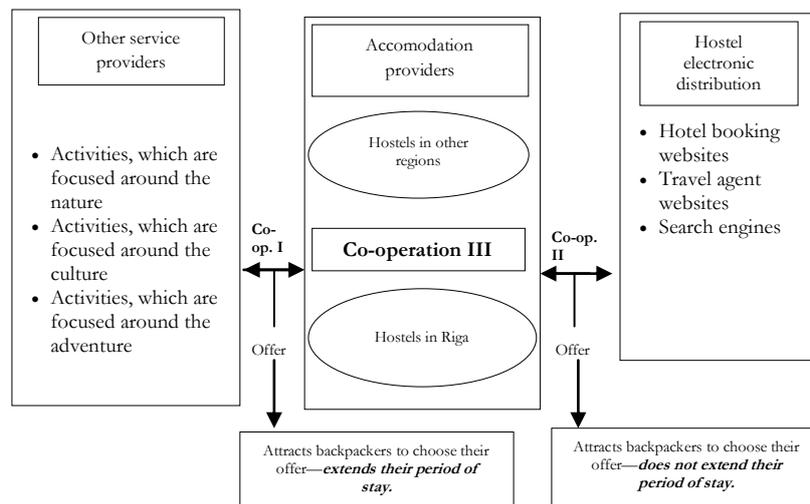


Figure 1: Co-operation between hostels and other service providers
 Source: author's construction based on telephone survey results and literature analysis on backpackers

Successful co-operation not only will contribute to the longer stay period of backpackers, but will also increase the satisfaction with the hostel. The findings from the research, that was conducted in 2005 in Scotland, showed—a significance level of information on the opportunities to travel, took the fourth place, when was evaluated the importance and satisfaction of 15 factors in accommodation (Nash R., Thyne M., Davies S. 2006). This clearly shows, that backpacker evaluates the information on travel possibilities higher, than other hostel parameters as it satisfies their needs more.

Most of the respondents felt, that for them would be useful to have information about the backpackers from public authorities. This interest was based on the fact that backpackers are respondent's clients, there have been unsuccessful attempts to create specialized offers for them, as well as interest to increase the hostel pressure by attracting this group of tourists. Respondents told, that they are not interested in this option if their hostel was fully pressured, the respondent was working with this client group for long time period and therefore they had all information, and they could not understand, how that could be helpful. This interest was based on the fact that backpackers are respondent's clients, there have been unsuccessful attempts to create specialized offers for them, as well as interest to increase the hostel pressure by attracting this group of tourists. Respondents told, that they are not interested in this option if their hostel was fully pressured, the respondent was working with this client group for long time period and therefore they had all information, and they could not understand, how that could be helpful.

To understand the backpacker market and use its potential more effectively, it is necessary to research this market segment. Although, there is the possibility to carry out this research individually for each interested person separately, it would not be so effective, because it would give the opportunity to explore most likely a small part of the backpackers on some small part of their behavior and habits. It would not allow to understand the size of the market and backpacker needs in general, as well as clearly to understand, with what priority is identified particular service or product to backpackers—e.g. which services are necessary to offer, what are the unmet needs. For example, there is free market for services, that no one has even thought about that particular service may be required by backpacker market. A bright example here could be an Iceland, which each year is visited by the huge quantity of tourists and one of the most commonly used

activities is the multi-day and week hiking. In forums some backpackers are suggesting to others to use the post service to send a parcel with dry clothes and food to the postal station, which is planned to be achieved after several days, it eases bags weight and in addition provides an opportunity to go for longer hiking, as by using this service, bag is not limited by weight and the volume, and it gives more safety as it can be replenished during the route. The problem is that this service is not directly offered to the specific tourists, because there is no information, research that would officially show this necessity. This example shows how information obtained from public authorities would be useful for service providers and backpackers. Thus, asking the same service providers, do they see the value and the need to obtain information about these tourists from public authorities, the answer could be given negative (as it was also in this research), as they can't imagine, how it could help them, but by providing them with specific information could be gained another understanding.

Conclusions, proposals and recommendations

Riga city is visited by backpacker tourists and there are some hostels, that focuses on work directly with this target group, although 19% of respondents, who were invited to telephone survey did not understand what backpackers are, that means that some service providers who could offer their services to these customers, don't know about them. The possibility is also, that between their customers already are backpacker tourists, but they are not recognized, which respectively leads to the fact, that there is no individual work done with these clients, what is needed to satisfy their needs and extend their period of stay.

Two type of co-operation in this survey was identified, which is implemented by respondents. Cooperation between commercial sector representatives to make binding offers for backpackers are not very active. The most commonly co-operation from representatives of hostels was understood as information placement in websites about hostel offers, work with search engines, which attracts the backpackers to make choice in favour of particular hostel, but at the same time to increase the hotel pressure, , it could be done also by extending their period of stay in chosen hostel and that requires the co-operation to make time spending offers for backpackers.

Most respondents felt, that for them would be useful to have information about the backpackers from public authorities. This interest was based on the fact that backpackers are respondents clients and they are working with them, as well as interest to increase the hostel pressure by attracting this group of tourists.

Due to the fact that the backpacker implement their ideas spontaneously, flexibly captures the changes and their time of stay is longer than for mainstream tourist, it is possible to promote the consumption of money on a wider geographical region within the same country. It makes potential for local spatial development perspective.

Currently there are no studies, which have explored how the co-operation between hostels and service providers should be realized to contribute for backpackers travel in a wider geographical area. At the same time it is clear, that to extend the backpackers period of stay within the one country, it is necessary to meet their needs, which is not limited with finding accommodation.

As for each country varies the activities in which could be interested the backpackers due to its individual differences, it is difficult to determine what types of offers would be seen as attractive from backpackers. From the made conclusions the following proposals are given:

- Enhance awareness about backpacker tourists by providing information on this specific tourist group.
- More actively implement co-operation between commercial sector representatives to make binding offers for backpackers, which could extend their period of stay.
- Research, how the co-operation between hostels and service providers should be realized to contribute for backpackers travel in a wider geographical area

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10 FESTUS OSARETIN EDOBOR

THE IMPACT OF TERRORISM AND VIOLENCE ON ENTREPRENEURS IN NIGERIA

ABSTRACT The word 'terrorism' is not new. It has become an issue of concern all over the world and Nigeria in particular. This brief paper examines the impact of terrorism and violence on Nigeria entrepreneurs. Both primary and secondary data were sourced for this work. The primary data were sourced from the list of 320 registered entrepreneurs in the south-south and south-west region of Nigeria, specializing in service delivery and manufacturing. 120 of them were randomly selected for the study. The secondary data were sourced from records on Gross Domestic Product (GDP) for the period of 1980-2012 and that of Foreign Domestic Investment (FDI) in Nigeria over the period of 1970- 2011. The responses of the 120 entrepreneurs to items of a well structured and validated questionnaire were analysed using the Likert 5- Point Scale and the results used in answering the research questions. The method of trend analysis via the use of simple graph is used to see if there is any effect of terrorism and violence on GDP and FDI. The study revealed that there is a relationship between terrorist activities and entrepreneurial development in Nigeria. The investigations also revealed that terrorism has not got a direct implication on FDI and GDP but on internal entrepreneurial activities which may on the long run affect the national GDP. It was concluded that terrorism has got great impact on entrepreneurs' activities in Nigeria.

Key words: Terrorism, Threat, National Security, Violence and Entrepreneur

Introduction

Terrorist activities recently have been on the upswing in the Nigeria Nation, a country that has suffered attacks from suicide bombers. The Nige-

rian economy is becoming unstable as the weight of terrorism has threatened every aspect of the economy and this has damaged investors' confidence and sent the economy on a downward slide (Emeka, 2011). The impact of terrorist activities on economic development has increased tremendously in Nigeria. Therefore, it becomes an issue of concern to all individual, government and corporate organisations. (Patrick & Akpan, 2012). The economic implications of violence and terrorism in Nigeria can be seen from different perspectives. The cost of destruction of lives of property and national productivity are directly affected while there are longer term indirect cost of reducing and curbing the menace, the human cost, the amount of lives wasted in the process. The cost of controlling and managing violent crimes and terrorism in Nigeria has really been very expensive (Institute for security studies, 2013).

Terrorism is caused by a combination of political, economic and institutional factors (Sonubi, 1973; Otobo, 1983; Owoye, 1991); according to Akpan, et al., (2012), terrorism reduces Foreign Direct Investment and hinders greater productivity. Terrorism in Nigeria is a latent function of prolonged failure of the Nigerian State to deliver purposeful good governance. When the Federal, state and Local Governments steal all the money allocated for building schools, hospitals, industries, etc, the greater percentage of the citizenry especially the youths are denied good education, employment and good health. These youths are therefore affected socially, psychologically and economically. Frustrations, dejection and hopelessness remain a day to day occurrence in their lives (Adeyemi, 2012). They can easily be brainwashed and indoctrinated with false doctrines and co-opted into illegal societies.

Generally, analysts agree that terrorism has a suppressive effect on an economy and study shows that it has actually never done any good in any part of the world. In Nigeria for instance, it is inadequate to mention terrorism in Nigeria without reference to the activities of Boko Haram, a terrorist group which has taken responsibility for most of attacks in some parts of the country. The increase in terrorist activities has, by most analysts' ratings, complicated the Nigerian business climate and made it investor-unfriendly. The impact of these nefarious activities on Nigerian economy has been intense so much so that the Minister and Deputy Chairman of National Planning Commission (NPC) Dr. Shamsuddeen Usman, says in a

remark that terrorist activities of the group have created a lot of distortions in the economic activities in the northern region.

The World Bank Investment Climate Assessment Report for the 2011 fiscal period indicates that the Nigerian business environment in spite of the ongoing reforms, remain hostile. According to the report, investors are losing 10 per cent of their revenue as a result of the hostile investment climate, poor quality infrastructure, crime, insecurity and corruption.

Scope and Definition of Terrorism

Different definitions have been given by different people, scholars and even organisations based on the way they perceived or experienced terrorism. For instance, the US Department of Defence defined it as the calculated use of unlawful violence or threat of unlawful violence to inculcate fear intended to coerce or to intimidate either citizens, societies, or even the government in the pursuit of goals that are generally political, religious or ideological. The Federal Bureau of Investigation (FBI) defined terrorism as the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population or any segment thereof, in furtherance of political or social objectives. The US Department of State defined it to be a premeditated politically motivated violence perpetrated against non-combatant targets by sub-national groups or clandestine agents usually intended to influence an audience. In 1992, the United Nations defined terrorism as anxiety-inspiring methods of repeated violent action employed by (semi) clandestine individual, group or state actors, for idiosyncratic, criminal, or political reasons, and where-in contrast to assassination where the direct targets of the violence are not the main target. The United Kingdom (UK) in 1974 defined terrorism as the use of violence for political ends and includes any use of violence for the purpose of putting the public, or any section of the public in fear. Adeyemo (2012) opined that the situation can be likened to genocide and defined it as the deliberate and systematic destruction in whole or in part, of an ethnic, racial, religious or national group. Arvind (2009) opined that terrorism may range from socio-economic and political theories based on the personality and environment. It could be motivated from inner drives to revenge or for financial gains. It also could be from fundamentalism to deprivation, political frustration, religious disparities, and resentment against the existing regime, or

intervention into personal freedom, oppression, and inequality as well as weak government. The essential elements of terrorism from the foregoing definitions involves the calculated (intentional) use of unlawful violence to put or produce fear in the public and these acts could be committed by a person, group, and does not exclude the state. It is an adversary acts that influences an audience beyond the immediate victim. The reason and strategy of the terrorists is to draw attention from the populace, organisation and states either local or international. They want to obtain the greatest publicity, and most times choose targets that symbolises what they opposed.

Terrorism and violence on Entrepreneurship: Evidence from Nigeria

Entrepreneurship is a major force that drives the economy of many nations; it is also an engine which new ideas are introduced continually into businesses and the market place. Entrepreneurs convert ideas into products and services and ultimately create wealth and reduce unemployment (Schumpeter, 2005). The strength of any nation depends on its ability to create wealth (Smith, 1776). The wealth creation process lies in the hands of individuals who are innovative. The Nigerian society is getting more and more insecure, more people are getting into crimes and they are getting more ruthless, desperate and sophisticated (Godly and Wilfred, 2012). Since the advent of the present democratic dispensation, new forms of violent crimes have become common; these include kidnapping (actually adult or privileged people's napping) for ransom, pipeline vandalization, Boko Haram bombings, rape, political violence and more (Eme, 2011). In some instances, whole villages are sacked because of minor political differences (Godly and Wilfred, 2012).

Like many developing nations of the world, Nigeria is significantly in dire need of uninterrupted development, sustained democratic governance, investment-friendly environment as well as ultimate macroeconomic stability (Patrick, 2012). Development therefore is multifaceted and multidimensional capturing structural, institutional, political, social and all round transformation process. Thus, there can be no meaningful growth without development and development becomes an illusion without growth. The achievement of growth and development therefore has been challenged by

the astronomical incidence of terrorist activities in Nigeria in recent times (Patrick et al, 2012). The pattern and trend of terrorism, revolution, different forms of strike actions, premeditated application or threats of violence against religious groups and politically motivated expressions of violence in the present democratic era have threatened development, democratic governance and economic activities in the land. According to Czinkota and Ronkainen (2009), the impact of terrorist activities on economic development, management and international business has increased tremendously in Nigeria. Odeselu in Shadare (2011) added that insecurity in Nigeria has affected all aspect of businesses negatively and that it scars away entrepreneurs as it drains the resources that could have been used to improve the economy. These resources according to him include finance and time.

Otto (2008) has shown that insecurity took a great toll on oil production in Nigeria between 1999 and 2008; Nigeria was producing at about 10% of its potentials of 3.4 million barrels of crude oil per day in 2007. This shows that insecurity has increased the unit cost of doing business in Nigeria. Apart from the fall in output and the increase in unit cost of production, many firms in different industries relocated away from the Niger Delta in particular while some left the country completely. Examples include; Michelin, Dunlop, among others. Tagba in Gbenga and Augoye (2011) argued that an insecure environment impinges directly on development; it disenfranchises communities, contributes to poverty, distorts economies, creates instability and stunts political development. In Nigeria, apart from the millions of people who had been killed in the course of one security breach or the other, sources of livelihood were destroyed, families got disintegrated and social infrastructure were disrupted.

As opined by Sonubi (1973), Otobo (1983) and Owoye (1991), terrorism is often caused by a combination of political, economic and institutional factors such as bad leadership, unemployment and corruption. The volume of corruption in Nigeria triggered the poverty profile of Nigeria to 69% (National Bureau of Statistics (NBS)). The NBS report further reveals that 112.47 million Nigerians live below US\$1.00 per day and as a result could barely afford the minimal standards of food, clothing, health care and shelter. According to Patrick et al. (2012), it reduces the chances of Foreign Direct Investment and hinders greater productivity. The indexes associated with this include lost in man-hours of productivity, wastages, high incidence of poverty, poor capacity utilization, breakdown in industrial pro-

duction, decline in economic growth, high incidence of unemployment, as well as prevalence of an unfriendly investment climate. Management experts say the terror unleashed by the militant sect, Boko Haram, has adversely affected businesses nationwide and that businesses and foreign investment activities inflow into Nigeria are being negatively affected by the activities of this sect in the northern parts of the country (Awoyemi, 2012).

According to Adebakin and Raimi (2003), it is appropriate to note that three explanatory variables, viz: security, education, agriculture are positively significant in economic development. This implies that these three variables have considerable impact on the gross domestic product of any nation. This work therefore, seeks to identify the impact of terrorism and violence on entrepreneurship in Nigeria.

Methodology

The research variables (dependent and independent), research questions as well as the method of data analysis are presented in this section.

Research Variables

Below are the dependent and independent researches variables identified and used in this work. Independent variables: Insecurity and Terrorism

Dependent Variables:

1. Profit: Net profit before terrorist activities and the incident of terrorism
2. Growth: Business growth pre terrorist activities and during their activities
3. Employment of New Employees: Has level of employment increase recently or decrease since the insecurity and terrorist activities. What is the number employed comparatively:
4. Loss of jobs/contracts- Rate of job loss as a result of insecurity and terrorism, Rate of labour turnover before terrorist activities and during their activities. Number of contracts signed before terrorist activities and during their activities
5. Closure of plants, locations and offices: Number of plants and offices closed before the terrorist acts and during their operation
6. GDP: GDP before terrorist activities and during their activities¹.

1. (<http://www.indexmundi.com/nigeria/>)

7. Poverty: What is the poverty level before and after terrorist
8. Capacity utilization: Capacity utilisation before terrorist activities and during their activities
9. FDI: Comparing Foreign Direct Investment before and during terrorist activities².
10. Waste Caused By Insecurity And Terrorist Activities: This is the waste in terms of human and material resources during the terrorist activities compare to pre terrorist era.

Research Questions

The following are the research questions: i) as an entrepreneur, to what extent do you think terrorism hinders the development of your organisation? ii) does terrorism and insecurity cause your business to operate under capacity and reduce production? iii) does insecurity and terrorism hinder your ability to hire qualified staff and professionals? iv) what is the effect of terrorism and insecurity on your motivation? v) does terrorism affect your planning and ability to plan? vi) have you suffered any job loss as a result of violence and insecurity? vii) has violence and insecurity cause you to waste resources? viii) has terrorists activities affected your profitability directly or indirectly?

Method of data collection and analysis

The primary data for this work were sourced from the list of 320 registered entrepreneurs in the south-south and south-west region of Nigeria, specializing in service delivery and manufacturing (Nigerian Business Directory, 2014). 120 of them were randomly selected for the study. The sample size is considered appropriate for the study because, beside the random selection, it represents about 38% of the study population of 320. The reason for choosing the south-south and south-west regions is that insecurity and violence has characterized them over time due to the fact that the nation's oil production which is chiefly in the area has been a major contributor to violence and insecurity in this region. The reason being that, the Niger-Delta people have not felt the impact of Government in alleviating the en-

2.(<http://www.indexmundi.com/facts/nigeria/foreign-direct-investment>).

vironmental and agricultural problems caused by the activities of oil companies.

The secondary data were sourced from the records on Gross Domestic Product (GDP) for the period of 1980-2012 and that of Foreign Domestic Investment (FDI) in Nigeria over the period of 1970-2011. As earlier mentioned, Otto (2008) stated that the period of insecurity in Nigeria is between 1999 and 2008. Observe that the periods of the GDP and FDI records include the periods before and after the insecurity period. These periods were found relevant to the study because if the GDP and FDI are found to drop significantly over the period of insecurity, then insecurity would be seen to have effect. The responses of the 120 entrepreneurs to items of a well structured and validated questionnaire were analysed using the Likert 5- Point Scale and the results used in answering the research questions. The method of trend analysis via the use of simple graph is used to see if there is any effect of terrorism and violence on GDP and FDI.

Result and Discussion

The results of the questionnaire data analysis using the Likert 5-Point Scale are discussed in the following paragraphs. Further more, the trend of GDP and FDI over the periods is presented in the appendix on page 147. The discussion on each item on table 1 and the trend of GDP and FDI over the period of study is presented in this section.

When asked the question: ‘As an entrepreneur, do you think terrorism hinders the development of your Organisation?’ 101 respondent representing 84.16% strongly agreed that terrorism hinders the development of their organisation, 9 agreed representing 7.50% while 8 (6.67%) disagreed and 1 (0.85%) strongly disagreed. This gives a Likert 5-Point Scale average of 4.68 affirming a positive response of the respondents to this item.

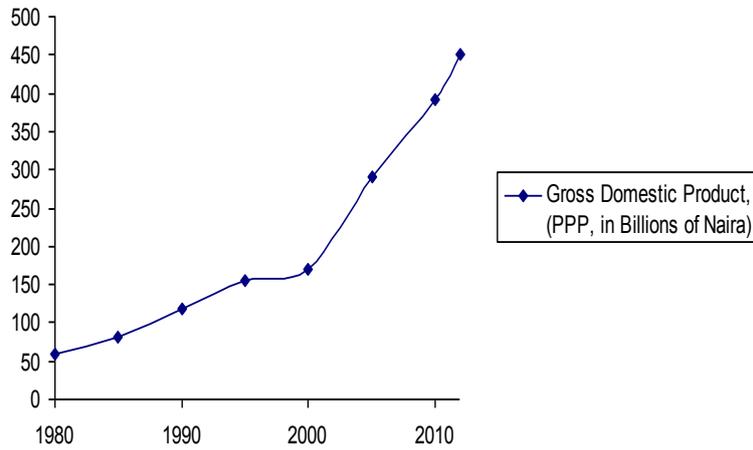


Figure 1: GDP trend over the period
Source: International Monetary Fund - 2012 World Economic Outlook

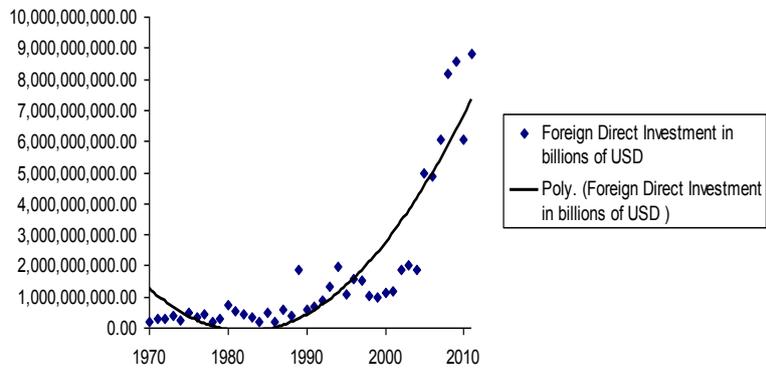


Figure 2: FDI trend over the period. **Source:** International Monetary Fund, Balance of Payments Statistics Yearbook and data files

Figure 1 on (above) displays the trend of GDP while figure 2 presents the trend of FDI over the period. Considering the years 1980, 1990, 2000 and 2010 respectively, GDP has been on the increase which connote that the terrorism has not made a serious impact on it, as opposed to Akpan et al (2012) that increase in terrorist activities leads to decrease in level of economic development. This in our opinion calls for further empirical investigation. We agree with Akpan et al (2012) that terrorism is bad for the economy of Nigeria as it leads to political, economic and regional instability.

As shown in figure 2 (page 148), FDI is also on the increase reason for this may be that most of the states in Nigeria are not threatened by insecurity and terrorism. It is true that there is movement of people from the trouble areas to more secured states but the investments continued to thrive in the country.

Insecurity also increases the unit cost of doing business in Nigeria. Apart from the fall in output and the increase in unit cost of production, many firms in different industries relocated away from the Niger Delta in particular. And some left the country completely. Example, include Michelin, Dunlop, among several others. Tagba (2011, cited in Gbenga and Augoye, 2011) argued that an insecure environment impinges directly on development; it disenfranchises communities, contributes to poverty, distorts economies, creates instability and stunts political development. In Nigeria, apart from the millions of people who had been killed in course of one security breach or another, sources of livelihood were destroyed, families got disintegrated and social infrastructure were disrupted.

Conclusion and Recommendations

This study has revealed that there is a relationship between terrorist activities and entrepreneurial development. This was revealed in the analysis of the questionnaire items as the view of majority of the respondents is that it has a negative impact on entrepreneurship in Nigeria. Our investigations revealed that terrorism has not got a short run direct implication on FDI and GDP but on internal entrepreneurial activities which may on the long run affect the national GDP. Therefore, the Nigerian Government and other interest groups should have the political will to implement the recommendations of several panels and committees set-up to investigate immediate and remote causes of violence and other crises in Nigeria.

There is the need for the creation of a community preventive policing rather than curative policing in order to ensure an enduring national security. This requires constant interaction by the security agencies (police, army, customs officers, and immigration officers) and members of the communities.

Federal Government of Nigeria should work assiduously at providing direct and indirect employment opportunities for unemployed, restive and hopeless youth in the six geo-political zones in Nigeria in order to dissuade them from being recruited as militants, armed robbers and terrorists.

The use of military action to confront militants appears to be very expensive and most often military confrontational approach escalates violence rather than douse tension. Principles of mediation, negotiation, arbitration, reconciliation and general amnesty are contemporary strategies for contemporary conflict resolution. All militants who accept reconciliation should be rehabilitated.

The Nigerian Government and other interest groups should develop sincere political will to implement the recommendations of several panels and committees set-up to investigate immediate and remote causes of violent socio political and ethnic-oriented crisis in Nigeria. The widespread environmental degradation and abuse of the ecosystem in the Niger-Delta should be redressed through adequate compensation to host communities in order to empower many frustrated and unemployed able-bodied men who took up arms against the state and multinational oil companies.

There is need for a clear and coherent national policy on terrorism. Akin to this, a well trained antiterrorism squad must be created from the Nigerian Army, Air Force, Navy, Police and State Security Service. The role of these security organizations must be clearly stated in order to prevent duplicity and conflict of functions. This is necessary and critical to Nigeria's preparedness to contain the development and spread of terror acts to other zones (more especially the Northern states where cases of terrorism have been reported in the recent time) that are prone to terrorism as Ogundiya (2009) observed.

The implication of the findings indicates that the ongoing terror and violence in the region for long time have damaging impact on the entrepreneurs and the future economic growth of the country. Future research should investigate why FDI and GDP have not responded so much to the

insecurity in some region and the effect of violence and terror on different sectors of the economy.

Limitation of the study

Research of this sensitivity and magnitude cannot be without limitations. Cost of logistics to gather relevant data was a major setback, data availability was also a challenge. Time constraint to get the work done was also not enough. The period under review for the GDP and FDI would have yielded a different result if the period was longer or if a different period was under consideration.

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