

Innovative business models: the ambush of disruptive technologies on business.

E. Francke

Department of Information Technology,
Cape Peninsula University of Technology,
Cape Town, South Africa
francke@cput.ac.za

B. Alexander

Department of Information Technology,
Cape Peninsula University of Technology,
Cape Town, South Africa
alexanderb@cput.ac.za

Abstract

The purpose of the study was to interrogate how the development of ICT particularly in Web 2.0, Social Media, Mobile Computing and Cloud Computing has impacted the way businesses function and the consequences to these businesses if they do not respond appropriately.

These pervasive technologies are described as disruptive technologies which are new technologies that unpredictably dislodge established technologies. The status quo and functioning of small businesses across various sectors will be significantly impacted by these technologies. Disruptive technologies are adopted easier by the corporate sector because of their capacity to do so and these could become technologies of competitive advantage. The Small Medium and Micro Enterprises (SMME) sector on the other hand might lack the same capacity to readily respond to technological innovation. This could cause a tension between them and the corporate sector and if they do not respond appropriately, they might experience significant losses. Design changes creative ideas into novel products, services and systems. Design connects creativity to innovation and has the ability to substantially improve brand image, sales and profitability of a business. Creativity and design have distinct roles in innovation and the broader business performance context with design appearing as a key differentiator for businesses. Design progressively plays a new role, one of competitive advantage and differentiator, establishing new markets by linking technology with commercial and user concerns. Digital Equipment Corporation (DEC) was an internationally renowned Information Technology (IT) enterprise in the 1970s, largely due to its strong and brilliant management team. When the minicomputer manufacturer started spiralling downward in the 1980s and eventually collapsing in 1988, its demise was ascribed to the incompetence of the once lauded management team. The reason for the implosion of the minicomputer industry was not just the rise of the personal computer, but what the personal computer represented: a disruptive technology to which the minicomputer companies could not respond. This qualitative research project involved a literature analysis focussing specifically on the business modelling and systems design aspects in the deployment of said disruptive technologies. The literature indicates that from a business perspective, technology can be broadly categorised into two classes, namely sustaining and disruptive technologies. Sustaining technology depends on gradual improvements to conventional technology. Disruptive technology is unsophisticated, lacks performance due to its novelty, appeals to a narrow audience, and may not yet have a tested practical application. The study has shown that businesses could possibly do all that seems to be correct by listening to their clients, investing in research and development, and by competing uncompromisingly. Despite this they could still fall prey to innovative

technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing or a business model that initially appeared to be ridiculous. The study recommends that businesses might have to consider recreating or reinventing themselves beyond just their products or services. Business Model Innovation is recommended to radically transform the business that competes not only on the value proposition of its offerings, but aligns its profit formula, resources and processes to enhance that value proposition, capture new market segments and alienate competitors.

The paper raises the notion of an innovative architectural business model for small businesses to be able to respond to the challenges of a wave of disruptive technologies that is impacting the industries within which these businesses are operating.

Keywords

Business, Business Model, Innovation, Design, Disruptive Technology, Web 2.0, Social Media, Mobile Computing, Cloud Computing.

Introduction

According to Evans (2011) technologies are becoming pervasive in the modern world and an increasing amount of people have access to the Internet, personal computers and associated technologies. Much of the innovation is happening in the knowledge space and not everybody has access to it so it requires a new strategy. What is critical now seems to be how well businesses react to what is available to them.

Johnson, et al (2008) indicates that in light of this, the new business model has to respond at various business levels namely the customer or the client; the product or the service; the internal capacity around the human resources provision and lastly around its governance. In fact part of the provision to customers and clients in terms of differentiation is in fact both externally to its customers and clients and internally to its employees. The business would need to establish a culture of responsiveness which then becomes the hallmark of the brand of the organisation which must be understood and internalised by its employees and customers. Innovation of the business model needs to be exercised both at the production and service provision as well as branding of the company so that it is intrinsically understood. This then shows what sort of business it is in terms of its ability to modernise its operation and benefits to the customer and is also inspirational to its employees.

The second aspect is that the industries in which small businesses operate will definitely respond to the disruptive technologies and the industry is in actual fact defined by the corporate sector. Normally the SMME sector lags in terms of adopting new technologies because of their under-resourcing. The SMMEs effectively work on the deficit model so they need to prioritize in the way that they respond as they are at most risk when they do not adequately respond to innovations around these disruptive technologies. The new agile and innovative business unit must evolve to develop strategies in order to respond. Christensen (1997) suggests that these strategies would be based on the awareness and engagement of the opportunities around such disruptive technologies as well as capacity to meeting these challenges.

According to Fisher (2001) business leaders need to accept that with the advancement of technology, the world is immensely more competitive and by creatively connecting technology with real business problems they can increase their ability to compete. Technology that does not translate into improved business systems or effective products or services is futile. The business that misses the mark to be adequately creative is merely investing more time and money in obsolete ideas. Astutely managed creativity in a business is pivotal to innovation and ultimately business sustainability and competitiveness.

Plummer (2011) presents Gartner's recent survey of their top predictions of strategic technologies for 2012 and beyond. It illustrates the IT trends and events that will alter the nature of business today and over the next few years. Gartner defines a strategic technology as one that is likely to profoundly impact business over the next three years. It is characterized by a high probability for disruption to IT or the business, the necessity for significant financial investment, or the threat of being adopted late. Business leaders should be aware of the opportunity for innovation through emerging disruptive technologies and solutions.

Driven by the propagation of Web 2.0, Social Media, Cloud Computing and Mobile Computing over the last few years, businesses have large volumes of information at their disposal but these volumes present a challenge in the manner in which businesses comprehend and handle the information. "The IT organization of the future must coordinate those who have the money, those who deliver the services, those who secure the data, and those consumers who demand to set their own pace for use of IT." (Plummer, 2011)

Evans (2011) suggests that the Internet is one of the most significant and influential creations in all of human history. The Internet has already had a significant impact on communication, business, education, science, government, and humanity in general. As an extension of this, the Internet of Things (IoT), will change everything and everyone. The IoT represents the next evolution of the Internet, now extending beyond the ability to gather, analyse, and distribute data that we can turn into information, knowledge, and finally, wisdom.

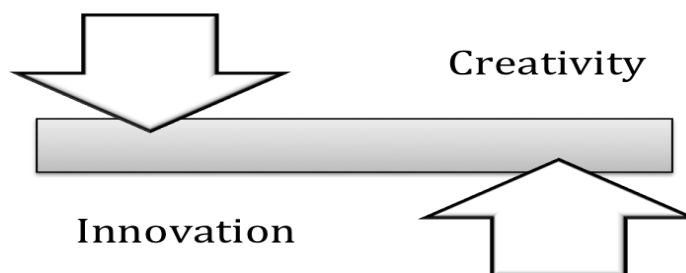
The business challenge is to determine how all of these Information Communication Technology (ICT) developments will impact business models and the importance for them to respond appropriately through innovation.

Literature Review

2.1 The value of design to business

There are numerous definitions of design with much of these focusing in on creative or industrial undertakings. Business leaders would have to consider how good design, not only in products and services but also in their business models, could improve their business for competitive advantage and sustainability.

Cox (2005) states that creativity is the generation of new ideas either by viewing existing problems differently or exploiting new opportunities through emerging technologies or fluctuations in markets. Innovation on the other hand is the successful exploitation of the new ideas. It is the entire transformation of the ideas into new products, new services, new ways of managing the business as well as conducting



business entirely. Design is what links creativity and innovation and it may be described as creativity deployed to a specific end. It shapes ideas to become practical and attractive propositions for users or customers.

**Generatio
n of
Ideas**

**Transformati
on of
Ideas**

Figure 1: Design linking Creativity and Innovation.

The views of Cox (2005) is corroborated by Hölzl et al. (2009) and van Cruysen (2009:41) who suggest that design changes creative ideas into novel products, services and systems. Design connects creativity to innovation and has the ability to substantially improve brand image, sales and profitability of a business. Creativity and design have distinct roles in innovation and the broader business performance context with design appearing as a key differentiator for businesses. Design progressively plays a new role, one of competitive advantage and differentiator, establishing new markets by linking technology with commercial and user concerns.

2.2 The proliferation of disruptive technologies

There has been significant acceleration in the development of disruptive technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing. Christensen (1997) describes disruptive technology as a new technology that unpredictably dislodges established technology. The author distinguishes between sustaining and disruptive technologies. Sustaining technologies depend on gradual improvements to entrenched technology. Disruptive technologies are unsophisticated, lack performance due to their novelty, appeal to a narrow audience, and may not yet have a tested practical application. An example of this would be Alexander Graham Bell's invention of the "electrical speech machine" in 1874, while he was toying with an earlier idea, the "harmonic telegraph" that could send more than one telegraphed messages at once. These are the pioneering technologies to not only the telephone but also modern smartphones and tablet computers.

On the other hand Fisher (2001) defines sustaining technologies as innovation that empowers industry leaders to improve things for their existing customers. Disruptive technologies are viewed as products or services that the best customers cannot use with lower profit margins than the business can support. Businesses disregard disruptive technologies for what appears to be good reason but ultimately at their peril. Businesses tend to focus too much on their most demanding customers which create an opportunity for disruptive technologies to impact their business.

Even though Christensen (1997) predates many modern disruptive technologies, the author's argument is still true today. "Large corporations are designed to work with sustaining technologies. They excel at knowing their market, staying close to their customers, and having a mechanism in place to develop existing technology. Conversely, they have trouble capitalizing on the potential efficiencies, cost-savings, or new marketing opportunities created by low-margin disruptive technologies."

Facebook (2012) reports that at the end of December 2011, Facebook recorded 845 million monthly active users with 80% of its users beyond the borders of the US and Canada. Of these there was an average of 483 million daily active users. Facebook mobile users exceeded 425 million in December 2011 and Facebook is available in more than 70 languages.

At the same YouTube (2012) states that it has over 800 million unique users each month. More than 4 billion YouTube videos are viewed daily and sixty minutes of video is uploaded to YouTube every second. More than 3 billion hours of YouTube video are watched each month with more than 1 trillion views, equating to approximately 140 views for every person on Earth. YouTube is hosted in 39 countries and available in 54 languages.

The ITU (2011) states that there are 5.9 billion or 87% of the world's population that are mobile subscribers. Of this China and India have nearly 1.8 billion subscriptions. The Global mobile statistics 2012 report states that mobile devices sales rose in 2011, with smartphones showing the resilient growth but feature phones are still selling intensely. Nokia remains the number one handset manufacturer, but Samsung is now the leading smartphone hardware vendor with the top smartphone operating system being Android. There are 1.2 billion mobile Web users worldwide, with the highest usage in Asia, particularly in South Korea and Japan who lead in mobile broadband penetration with 91 and 88 percent respectively. Mobile devices account for 8.49 percent of global Website hits. In the US, 25 percent of mobile Web users are mobile-only, i.e. they do not, or very rarely use a desktop, laptop or tablet to access the Web. Japanese mobile users are still more progressive in mobile behavior, using mobile Web, apps and email more, but US and European users prefer to text (up to 8 trillion text messages worldwide in 2011) and play more games on their mobiles. Most popular mobile destinations are news and information, weather reports, social networking, search and maps.

Gartner (2008) defines a disruptive technology as, "One that causes major change in 'the accepted way of doing things', including business models, processes, revenue streams, industry dynamics and consumer behaviour."

One such technology that is radically changing the way data is stored today is illustrated by Tran et al. (2011) who indicate that the shift from traditional storage devices to the migration to the cloud is likened to the disruption in the IT sector when organizations shifted from mainframe computers to minicomputers as well as from standalone desktop computers to networked systems.

Schadler (2012) states that businesses can improve efficiencies to their customers, partners, and employees with systems of engagement brought about by mobile, social, big data, and cloud technologies. Systems of engagement refer to the capability to empower all the business stakeholders with context-rich applications and smart products to assist them to make decisions and to take immediate actions at the appropriate time and place. What makes this technology different is that it does not focus on process but rather people. An example of how systems engagement will improve on existing systems in a hotel is by improving the checking-in process. By means of Global Positioning System (GPS) or location context technology, an application on a smartphone will detect that a new guest has entered a hotel and would likely want to check in. The hotel reservation system will then default to the concierge and room service tabs and in so doing providing immediate access to the relevant hospitality services. A returning guest can via the same technology be recognised by the system, immediately transmitting the relevant information which then reduces checking-in time considerably. In this way the checking-in process is expedited and personalised for the customer and in so doing systems of engagement lends itself to improved customer experience and satisfaction.

"These new systems harness a perfect storm of mobile, social, cloud, and big data innovation to deliver applications and smart products directly in the context of the daily lives and real-time workflows of customers, partners and employees. The compelling notion of context is the sum total of what your customer has told you and is experiencing at the moment of engagement is made possible with cloud delivery and predictive analytics applied to a blend of data from device sensors, social feeds, personal preferences, and systems of record" (Schadler, 2012).

Gartner (2008) is of the opinion that social networking technologies, web mashups and cloud computing are amongst the ten most disruptive technologies that will form the IT landscape over the next five years. Business systems will start to emulate the features used in social media applications like Facebook, as organizations seek ways of improving employee collaboration and harnessing the community feedback of customers. The true value of this for the business lies in its ability to reconcile this feedback into an integrated system that mirrors collective attitudes, which will then assist to shape a business strategy. Web mashups, that combine content from publicly available sources on the Internet, will be the foremost model for the design of new business applications. What is required is the establishment of an official mechanism for evaluating emerging trends and technologies, with the help of competent staff, and affording them time to research new ideas and innovations, especially those that are being driven by consumer and Web 2.0 technologies.

Tynan (2008) reports that IT is extremely dynamic and its development certainly has a means of grasping established ideas and engrained industries and turning them on their head. Information technologies will often pair up to become disruptive technologies. A few significant partnering disruptive technologies are listed in table 1.

Disruptive Technology One	Disruptive Technology Two	Impact on Industry
Digital Video Recorders	Entertainment on Demand	The ubiquitous model of media consumption is turning the entertainment industry and the consumer electronics industry on their heads, and forcing advertisers to rethink ways to capture our attention.
YouTube	Cheap Digital Cameras and Camcorders	Digital video has encouraged mass movie production. Social media applications afford the masses an opportunity to stage their amateur movies which is having a significant impact on sectors like journalism, politics, and entertainment.
MP3	Napster	The concept that music should be portable and free is disruptive.
Cloud Computing	Always-On Devices	Cloud computing provides business with benefits of a data center without the expense and trouble of maintaining one. It offers the average user lower cost of storage with fewer devices and ubiquitous access to data and applications. Hardware and communication networking industries are significantly impacted by this.

Table 1: Disruptive technologies' impact on industries (Tynan, 2008)

Mulholland (2011) identifies technological devices that have been impacted by disruptive technologies. What was once indispensable devices are now being replaced by smarter and ostentatious ones. A few of these are listed in table 2.

Old Technology	Disruptive Technology	Possible reasons
Camcorders and compact cameras	Smartphones and tablet computers	Smartphones are equipped with up to 12-megapixel cameras that compare well with many cameras. While all the sophistication might not presently exist, the evolution of these phones will lead to improved photos and videos.

iPods and other portable music players	Smartphones and tablet computers	Apple has fallen prey to its own success as sales of its iPhone and iPad are reducing sales of its iPod music players. Sales of iPod peaked in the U.S. in 2008, one year after the iPhone appeared, and have been plummeting ever since.
GPS devices	Smartphones and tablet computers	External GPS navigation devices are being threatened by smartphones largely due to the Android operating system that extends Google Maps to phones and tablets.
Answering machines	Smartphones and tablet computers	In the world of instant communication, answering machines and voicemail services are regarded as being too slow. Facebook, Twitter, instant messaging and email are the preferred options.
eBook Readers	Tablet computers	Recently books were being threatened by e-readers, now they have in turn become threatened by tablets.
External storage devices	Cloud computing	The ability to store data in the cloud is threatening the continued existence of zip drives, flash drives and perhaps the computer hard drives.
Watches, alarm clocks and wall calendars	Smartphones and tablet computers	These devices are able to reliably and conveniently provide users with the time and date which threatens the sale of calendars, alarm clocks and watches in general.

Table 2: Old technologies being replaced by disruptive technologies (Mulholland, 2011)

It appears that the major business benefit of disruptive technologies is business innovation, distinguished products and services, and profitable growth. The business leader should be the channel from the business to the technology but also understanding that these technologies should be used to solve a problem that has been identified in the business.

2.2 The importance of Business Model Innovation (BMI)

Tucci (2011) states that Digital Equipment Corp. (DEC) was an internationally renowned IT enterprise in the 1970s, largely due to its strong and brilliant management team. When the minicomputer manufacturer started spiralling downward in the 1980s and eventually collapsing in 1988, its demise was ascribed to the incompetence of the once lauded management team. “The reason for the implosion of the minicomputer industry was not just the rise of the personal computer, but what the personal computer represented: a disruptive technology to which the minicomputer companies could not respond” (Christensen, 1997). This author continues to say that DEC required Business Model Innovation (BMI) in order to respond to the disruptive technologies of the time. BMI refers to the creation, or reinvention, of a business itself. While innovation ordinarily manifests in a new product or service, BMI results in a completely different type of business that competes not only on the value proposition of its offerings, but aligns its profit formula, resources and processes to enhance that value proposition, capture new market segments and alienate competitors.

According to Meyer (2009) businesses should not only focus on customers when they look at innovation. It is important to understand the “job” that the product is hired to do by those customers. As an illustration of this the author makes use of research into milkshake sales of a retail store. The store discovered that many of their clients who bought their milkshakes were adults who bought the shakes in the morning. They would typically buy one milkshake as take-away and no other products at all. Further research indicated that these clients were commuters, and the “job” of the milkshake was to provide distraction on a long travel and to sustain them until lunch. The competitor products to this “job” were bananas, donuts, breakfast bars and coffee. These clients preferred milkshakes because milkshakes take a

long time to eat, don't splash or leave crumbs, and can be held in one hand or be put into a cupholder during the drive. Afternoon and evening sales of milkshakes revealed a very different client with the majority being parents with kids. The "job" here was that of parents wanting to treat their kids. The two "jobs" of the milkshakes required different innovations with morning sales requiring thicker and more wholesome milkshakes for the mornings and thinner and more tastier milkshakes for the afternoon.

The BMI for this store considers that innovations that would improve sales in the morning would not necessarily meet the needs of the afternoon and evening. The BMI would be to have two different shake formulations for mornings and the rest of the day. "The point is to understand why someone buys the product, not who buys the product. The demographics of milkshake buyers are less important than the fact that one segment buys the product as a distraction and protracted meal while the other buys it as a sweet attraction and quick desert" (Meyer, 2009).

Christensen, et al (2008) define the role of BMI by stating that initially, a simplifying technology is needed to trigger the disruption, a new business model is then needed to extend the reach of the technology and a comprehensive value network must ultimately evolve to support it.

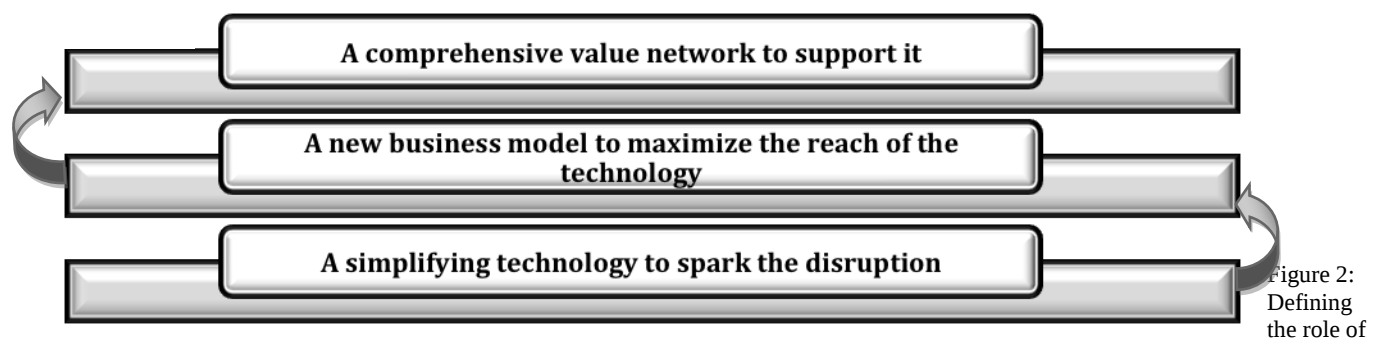


Figure 2:
Defining
the role of

Business Model Innovation (Christensen, et al, 2008)

Johnson, et al (2008) established the 4-box model for BMI suggesting that a business model comprises four interlocking elements that, taken together, create and deliver value. Innovation can occur in one or more of these areas simultaneously.

1. Customer Value Proposition - find a way to create value for customers
2. Profit Formula - how the company creates value
3. Key Resources - required to deliver the value proposition
4. Key Processes – how to deliver the value to customers

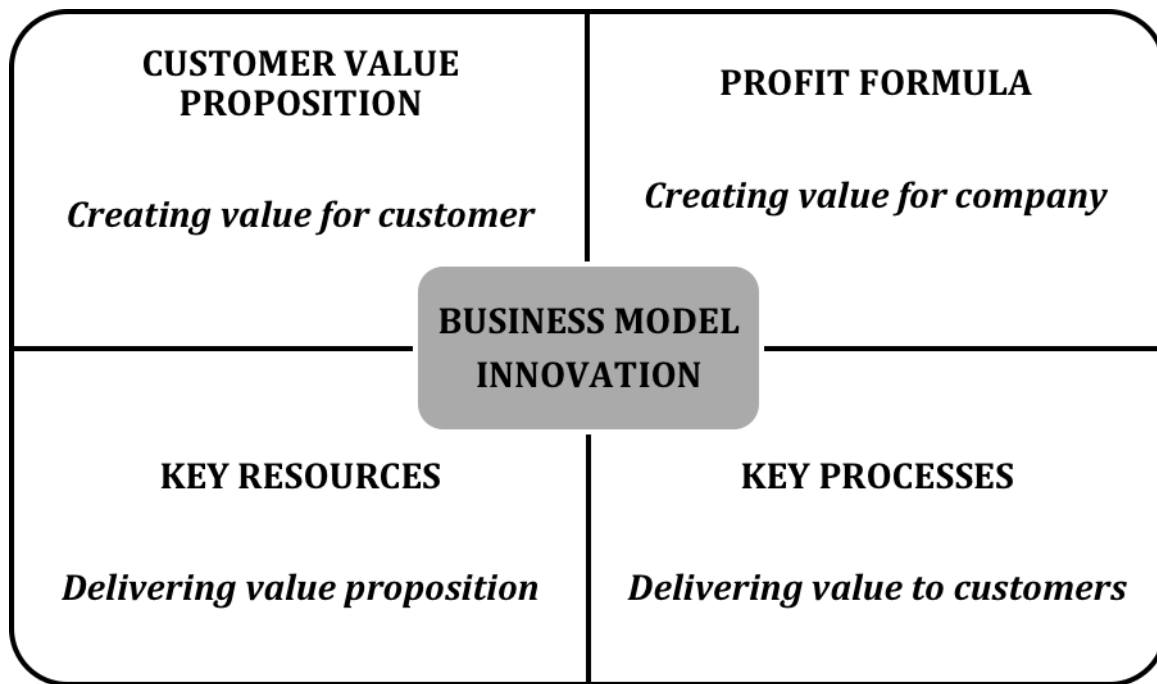


Figure 3: The 4-box model for BMI (Johnson, et al, 2008)

Research methodology

In this research project, a literature analysis has been done to determine how disruptive technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing impact the way businesses function and the consequences to these businesses if they do not respond appropriately.

Emerald, EBSCOhost and Google Scholar were the preferred means of searching for accredited journal articles, conference papers, white papers, associated business journals and other academic sources in order to produce a comprehensive overview of Design, Web 2.0, Social Media, Cloud Computing, Mobile Computing, Disruptive Technologies and BMI.

Due to the plethora of available literature, it was not realistic to make a comprehensive study of all previous knowledge of the relevant research themes. Instead, the focus was on searching and selecting high-impact references, with distinguishing accent on research providing concrete empirical evidence particularly when it applied to usage and adoption statistics. Information technology professionals' insights posted on reputable websites and blogs as well as in business magazines were also deliberated. The purpose of linking the professional with the academic viewpoints was to reap more considerations from diverse sources as well as current statistics, to augment the research project.

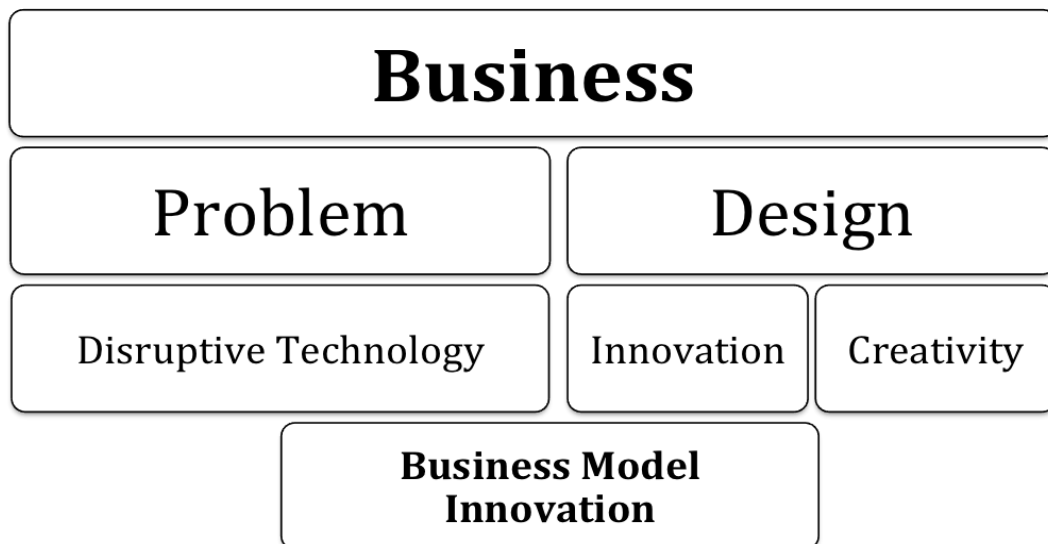


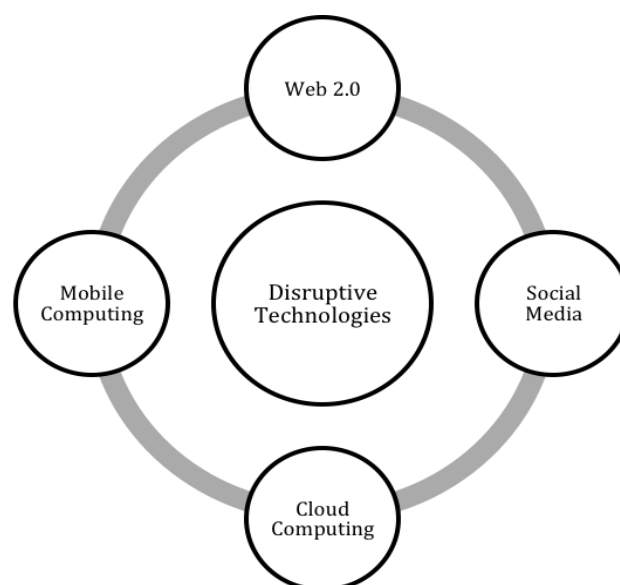
Figure 4: An overview of the literature study

Discussion

The literature indicates that a distinguished US based minicomputer manufacturer called Digital Equipment Corporation (DEC) collapsed in 1988 due to the eminence of the personal computer. Critics blamed the ineptitude of the once acclaimed management team to respond appropriately. The reason for DEC's demise was however not just the popularity of the personal computer, but that it epitomized a disruptive technology to which DEC could not retort.

It appears that good design in business models and not exclusively in products and services could develop a business to be more competitive and sustainable. By linking creativity and innovation, design transforms creative ideas into innovative products, services and business systems.

There has been substantial development of disruptive technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing over the last few years. These technologies have already and are highly likely going to continue to impact business with considerable consequences. Many industries as well as established technologies have already been reengineered and some have been made obsolete.



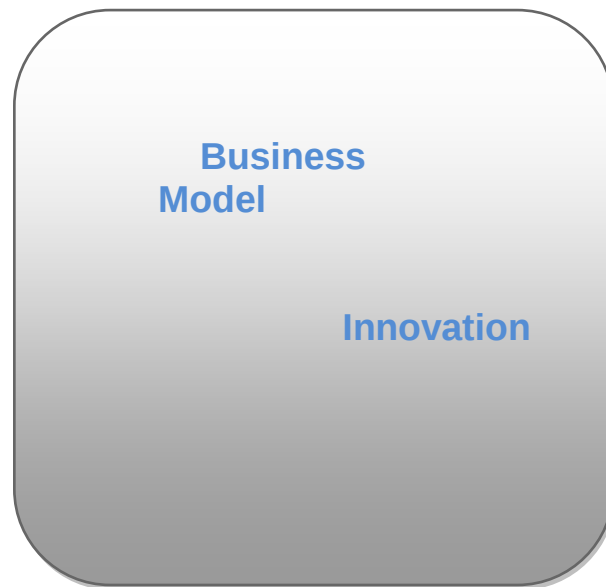


Figure 5: The relationship between the disruptive technologies and BMI

Disruption to industries is seldom the result of a single device or innovation but rather when two or more technologies unite – by this researcher’s own proposition. What was once essential technological devices have been crushed by disruptive technologies and are now being replaced by smarter and flashy ones.

It seems that the foremost business value of disruptive technologies is business innovation, distinguished products and services, and profitable growth. BMI is required to assist businesses to respond to disruptive technologies. While innovation ordinarily manifests in a new product or service BMI refers to the creation, or reinvention, of a business itself.

The old concept of the company where everyone lives in the boundaries of the company is outdated. We have seen in the last many years how the notion of a “bounded” company has changed to that of a “networked” company where outsourcing is typically used to deal with different aspects of the business. The networked company is more agile and flexible and is not limited in responding to disruptive technologies as bounded and more hierarchical companies would be. The branding of the networked company is most important to it being identified in the marketplace. The brand value needs however to be built on product quality and service delivery. There are of course governance issues to be considered that may impact the extent of the company network.

It is imperative that the SMME sector needs to strategise around the adoption of disruptive technologies. The corporate sector will adopt much of these technologies and convert these into competitive advantage and SMMEs have to respond to the gap that will result. The SMME sector needs to be aware and responsive at the business levels of the customer, employee configuration, production or service towards profit and governance considerations. This then redefines the notion of an agile company where both the branding as well as competitiveness of the business is established within the same conceptual framework. There are four categories that inform the architectural model of this new agile company, namely - the customer, the employee, the production/service and governance. The tenets of this innovative architectural business model will be explored in future research.

It is conceivable that a new theory will emerge to explain the state and dynamics of business operations modelling for environments impacted by disruptive technologies. The theoretical proposition will be based on the Johnson 4-box model Business Model Innovation which proposes a process model which launches the conceptions around the architectural model. This model will drive business efficacy which in turn is driven by the interests of the business stakeholders. This will inform the strategic alignment and operational imperatives of SMMEs to remain sustainable and competitive in the world of pervasive disruptive technologies.

The research project has also revealed that businesses would have to be mindful as to how good design of their business models can enhance their competitiveness and long term sustainability. Design can be used to gain competitive advantage by assisting the business to establish new markets, products and services.

Advances in disruptive technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing have already and will continue to impact various industries over the next few years. They have radically redesigned many sectors of the market and have led to the downfall of several businesses and once popular technologies. Businesses need BMI as a means of countering disruptive technologies by recreating themselves. A failure to respond to these disruptive technologies can lead to significant losses or perhaps the demise of the entire business.

Conclusion

This study has shown that there has indeed been much development in disruptive technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing over the last few years. It is not unusual for businesses to dismiss the value of disruptive technologies because they do not support current business goals, only to be ridiculed as these technologies mature, gain in popularity and market share and disturbs the status quo. A strategic focus on the developments of these disruptive technologies, the prospective benefits and their successful implementation is crucial to the long-term success of the business.

As an extension to this research project, an empirical study will be conducted to determine the influence of current disruptive technologies like Web 2.0, Social Media, Mobile Computing and Cloud Computing on businesses within South Africa. Furthermore, research could be done to develop frameworks that could assist businesses in deciding with more self-assurance whether it is appropriate for them and if so, how to approach the disruption.

This research project has explored the field of BMI and should assist businesses who are either re-evaluating their present business status and how to ensure sustainability by adapting their business model or possibly for businesses growing in new markets. It has proven that these businesses engaging in innovations need to consider significant changes in customer value proposition, the profit formula, key resources and key processes.

This paper raises a clear caution that investment in technology without investing in new business models could be catastrophic.

References

1. Christensen, C. 1997. The innovator's dilemma: when new technologies cause great firms to fail. *Harvard Business School Press*, ISBN 978-0-87584-585-2. Boston, Massachusetts, USA.

2. Christensen, C; Grossman, J & Hwang, J. 2008. The Innovator's Prescription: A Disruptive Solution for Health Care. McGraw Hill. ISBN 0071592083.
3. Cox, G. 2005. Cox Review of Creativity in Business: building on the UK's strengths. Available www.hm-treasury.gov.uk/cox (accessed 11 April 2012).
4. Evans, D. 2011. The Internet of Things - How the Next Evolution of the Internet Is Changing Everything. Cisco Internet Business Solutions Group (IBSG). California, US.
5. Facebook fact Sheet. 2012. Available <http://newsroom.fb.com/content/default.aspx?NewsAreaId=22> (accessed 06 April 2012).
6. Fisher, L. 2001. The thought leader interview. Strategy and Business. Fourth Quarter, Issue 25. California, US.
7. Gartner Identifies Top Ten Disruptive Technologies for 2008 to 2012. [2008.]. Available http://www.gartner.com/it/page.jsp?id=681107#_ftn1 (accessed 12 April 2012).
8. Global mobile statistics 2012. 2012. Available <http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats#phone-shipments> (accessed 12 April 2012).
9. Hollanders, H and van Cruysen, A. 2009. Design, Creativity and Innovation: a scoreboard approach. PRO INNO /INNO Metrics: Design, Creativity and Innovation. Maastricht, Netherlands.
10. International Telecommunication Union. 2011. Key Global Telecom Indicators for the World Telecommunication Service Sector. Available http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html (accessed 12 April 2012).
11. Johnson, M; Christensen, C & Kagermann, H. 2008. Reinventing Your Business Model. Harvard Business Review. Volume: 86, December Issue, Industrial Research Institute, Inc., Pages: 57.
12. Meyer, A. 2009. Job-focused innovation. Available <http://workingknowledge.com/blog/?p=478> (accessed 11 April 2012).
13. Schadler, T. 2012. A Billion Smartphones Require New Systems Of Engagement. Available http://blogs.forrester.com/ted_schadler/12-02-14-a_billion_smartphones_require_new_systems_of_engagement (accessed 11 April 2012).
14. Tran, V; Keung, J; Liu, A & Fekete, A. 2011. Application Migration to Cloud: A Taxonomy of Critical Factors. *ACM Workshop SEECLOUD '11*. Waikiki, Honolulu, HI, USA.
15. Tucci, L. 2011. Available <http://searchcio.techtarget.com/news/2240033844/The-CIOs-dilemma-Disruptive-innovation-vs-performance-improvement> (accessed 11 April 2012)
16. Tynan, D. 2008. The 10 Most Disruptive Technology Combinations. Available <http://www.pcworld.com/printable/article/id,143474/printable.html> (accessed 12 April 2012)
17. YouTube Statistics. 2012. Available http://www.youtube.com/t/press_statistics (accessed 06 April 2012).