A Study On Correlation Between Brand Identity Integrity And Innovation Capabilities

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Abstract

In this study, brand identity integrity of some of the consumer electronics companies are evaluated through Design Format Analysis (DFA) to understand if innovation characteristics and design fixation concept plays a role in brand identity integrity.

Design fixation defines the tendency to be fixated to design solutions that are previously seen before starting a design process (Jansson & Smith, 1991). It may be hypothesized that, companies that have an original equipment manufacture (OEM) and original equipment manufacture (ODM) background along with an incremental innovation capability will take longer to develop a brand identity in an upcoming product concept. In their studies, Dell'Era and Verganti (2007) also found that companies that have a radical innovator character seem to have a more integrated brand identity when compared to incremental innovators. Also it is hinted in the literature that companies which have OEM and ODM background have difficulties about transition to build radical innovations (Hobday, 1998).

In this study, brand identity integrity of companies that have an OEM and ODM background are evaluated along with the others that have radical innovation capabilities. The evaluation of brand identity integration is conducted through DFA. The DFA method is originally used for analyzing the brand identity characteristics of a company; however, in this study it is used in a more critical way to see how scattered are the product portfolios. As the result of the study, it may be claimed that the companies which could be affected by design fixation, may have less integrated brand identities.

Keywords: Innovation, product identity, design fixation

1 Introduction

Recently, the studies on design-driven innovation brought many insights about the effects of the innovation characteristics on products. Some of the studies explore the differences between incremental and radical innovation of product meanings, one being the study done by Dell'Era and Verganti (2007). The study suggests that, incremental innovators of product meaning have more heterogeneous product identity when compared to radical innovators of meaning.

In this study, it is aimed to explore if design fixation concept may play a role in explaining the relation between identity integration and innovation capabilities. To do so, the identity homogeneity of radical innovators and companies that have OEM and ODM backgrounds are examined. A possible link between OEM and ODM practices and heterogeneous identity integration may hint the role of design fixation in innovation characteristics and product identity homogeneity.

Innovation capabilities of the consumer electronics companies will be studied through literature review. Product identity integrations will be evaluated through Design Format Analysis (DFA).

2 Design Driven Innovations

Design-driven innovations are suggested to make an affect on a product's meaning (Utterback, 2006; Verganti, 2009).

While technological innovations change or improve technical capabilities of a product, design-driven innovations change how a product is perceived and used; eventually its meaning (Norman & Verganti; 2014). Thus, innovations on products can be evaluated regarding both technology and design aspects. Also, both of these aspects can be radical or incremental. So, four types of products are defined in the literature regarding the innovation types.

Market pull innovations are incremental in both technology and meaning; the stimuli for innovation mostly comes from market and users (Norman & Verganti, 2014). *Design driven innovations* include radical change in the perception of a product; innovation is originated from product design which alters the meaning of the product for the users (Verganti, 2009). *Technology push innovations* occur when only there is a radical change in a product's technology, while *technology epiphanies* happen when radical changes can be seen in both technology and meaning of a product (Verganti, 2011).

There are studies done in the literature about differences between companies that have radical and incremental characters, regarding design oriented innovation. Companies that can make design driven innovations tend to focus on the future and changes in the society, rather than concentrating on current market needs (Dell'Era & Verganti, 2009-a). Also, companies that are known to have design driven innovation capabilities seem to have a tendency to work with designers from different industries, backgrounds and countries, when compared to companies that have a market pull innovation character (Dell'Era & Verganti, 2009-b, Dell'Era & Verganti, 2010). One other study of Dell'Era and Verganti (2007) hints that, companies that

are able to produce design driven innovations have more homogenous product identities when compared to others.

3   Latecomers – OEM and ODM Practices

The definitions for *latecomer firms* in the literature are various as some put market aspect to focus, while others basically consider technological abilities. Regarding varying definitions, it can be interperated that (1) latecomer firms lack a developed domestic market, (2) they are mainly originated in developing countries (therefore have difficulties in reaching technology sources), (3) they are technology followers and (4) they are mostly manufacturing companies that start production with assembly (Chung, 2011). Most of the studies on latecomer firms examine Asian countries (Hobday, 1998 ; Kim & Seaong, 2010; Kim, 1998; Hobday et. al. , 2004; Ho-Don, 2012).

The main characteristic for latecomer companies regarding technological aspects is, they usually start their production with assembly practices and as they get more experienced in technology, they start developing process innovations and product design capabilities to be followed by product innovations; thus they pass through stages of acquisition, assimilation and improvement of technologies of products (Kim, 1998).

Also, latecomers can start their assembly practices with OEM production, in which they produce products designed by other companies for them, through their specifications (Hobday, 2000). They tend to follow OEM with ODM, in which they design and produce products for these companies and then start OBM to produce products for their own brand. In the literature, it is suggested that latecomer companies mostly have incremental innovation capabilities (Choung et. al, 2000; Chang et. al, 2012).

4   Design Fixation and It's Theoretical Link with Product Identity Integrity Coupled with Innovation Characteristics

Design fixation explains the tendency to solve a design problem within an existing solution context that has been observed along with the design problem. Jansson and Smith (1991) observed that when a solution alternative is given to designers while explaining the design problem, designers show a tendency to bring solutions that are similar to the one provided.

Purcell and Gero (1996) suggested in their study that, experience in a certain problem area may increase the possibility of occurrence for design fixation. Issues about product identity are mostly handled by product designers, so it may be assumed that product designers could be fixated to product forms, therefore identity cues of the products they observe. Cheng et. al. (2014) observed in their study that, design students get fixated more on the product form when provided with full views of alternative solutions for a product, when compared to students that are shown only partial photographs of the same products. Linsey et. al. (2010) also suggest that fixation can be lessened by using analogies. It is also suggested that fixation effects can be reduced by staying away from the problem and suggested solutions along with using evolved analogies (Smith et. al, 2011).

Companies with design driven innovation capabilities are claimed to have more integrated product identities (Dell'Era & Verganti, 2007); however the theoretical relation between two

concepts are not explained and researched in detail. As explained before, these companies mostly work with designers with diverse backgrounds (architects, interior designers, etc.) and stay away from recent market situation to focus on upcoming trends of future. Therefore they reduce the risk of getting fixated through experience (Purcell & Gero, 1996, Cheng et. al., 2014), can import evolved analogies from other fields through designers from different industries and they can stay away from current solutions (Smith et. al., 2011).

Studies show that solid product identity cues can be transferred to other products (Karjalainen, 2007). So it may be claimed that once a company form a genuine product identity, it can transfer its design cues to a new line of products. It may be suggested that companies with design driven innovation capabilities can produce and pass distinctive identity codes since they do not always get affected by design fixation concept. However, latecomer companies with a background of OEM and ODM start their design practices by using identity codes of other companies, and when they pass to OBM, they start as incremental innovators that focus on the products that are on the market. A market pull approach may end up with getting fixated on other products; the research on the products as a whole may lead to design fixation, as discussed by Cheng et. al (2014). Accordingly, the companies with OEM and ODM backgrounds may use more design codes that are derived from the market, therefore more heterogeneous product identities.

To sum up, it is hypothesised that, the companies that have OEM and ODM backgrounds can be prone to design fixation. Therefore, along with their incremental innovation capabilities, they may have more heterogenic product identities when compared to the companies that have radical innovation capabilities.

5 Research Method

In this study, Design Format Analysis (DFA) is done for four smart-phone producers to see if the companies with OEM and ODM backgrounds show more heterogeneous product identity integration.

DFA is a method that is used to define and rate the identity codes in products to evaluate overall design characteristics of a company and to evaluate integration of product identity (Warell, 2001). The codes can be rated "strongly existent" (filled circle – 2 points rate), "less existent" (empty circle – 1 point) and "non-existent" (no circle – 0 points) regarding their visual strength (Karjalainen, 2007).

The companies that are included in this study are chosen among the most cited firms in the literature on design driven innovation and latecomers. The DFA is done by the researchers, who are industrial design scholars. The codes are evaluated in groups as the "dominant codes" which define the main outline of the products and the "recessive codes" which define the details of the products. Front faces of the smart-phones are coded; as users mostly interact with front faces, and devices are also promoted through them.

Figure 1. Smart-phones displayed in a store

6   Research

In this research, the flagship smart-phones of Apple, Sony, LG and Samsung are analyzed through DFA. DFA is done for the various generations of the same product line, as it can be regarded as one of the main directions to examine identity integrity (Monö, 1997).

Apple is regarded as one of the companies in consumer electronics industry to form design driven innovations (Dell'Era & Verganti, 2007). Company is known to bring new product languages and forms to the industry (Verganti, 2009), which can also be case in smart-phones as iPhone can be stated as the archetype for today's dominant design for smart-phones. Sony is another company that is claimed to have design driven innovation capability (Norman, Verganti, 2014). The company is referred as a radical innovator in many studies that study its well-known products such as Sony Walkman (Mascitelli, 2000; Chiesa & Frattini, 2011).

LG and Samsung is referred as the latecomer companies that have OEM and ODM practices in their backgrounds (Hobday, 1998; Hobday, 2000; van Hoesel, 1999). These companies are also suggested to show incremental innovation capabilities (Kim & Seong, 2010; Cho, 2004).

For this study, iPhone, Sony Z, Samsung Galaxy S and LG G series are evaluated. All of the visuals and information about the products were derived from these companies' official websites at 15th December 2015 by the researchers. iPhone products were released between June 2007 and September 2015, while Samsung Galaxy products were released between June 2010 and April 2015 and LG G products between September 2012 and April 2015. Sony produced smart phones under Sony Ericsson; however Sony Xperia Ion seems to be one of the first smart phone that has been produced under Sony brand, which has a product architecture similar to Xperia Z series. Sony Xperia Ion and Xperia Z series cover a time span of February 2012 - November 2015.

Due to the length of this study visual data about these smart phones cannot be presented in this paper. Identity codes will not be explained in detail, however codes were kept relatively descriptive and objective. The codes were evaluated in two sections, as some of the codes seem to have more effect on visual identification. The dominant outline codes define the basic outline and most visible elements such as screen ratio, buttons, logo and frames. The recessive codes define the details about products, such as speakers, microphones and cameras. The products that do not have distinguishable difference to predecessor have been eliminated (such as iPhone 4s).

7   Results

The DFA analysis for the Apple and Sony products are shown in the tables below.

Table 1. DFA tables of Apple and Sony smart-phones

SONY	ION	Z	Z1	Z2	Z3	Z5	(12)
Straight top and bottom lines	●	●	●	●	●	●	2
Visible direction buttons	●						2
Visible Xperia logo	●						2
Logo located above the screen	●	●	●	●	●	●	12
Centered screen		●	●	●	●	●	10
Outer frame with average thickness	●	●	●	●	●	●	12
Relatively wide screen	○	●	○	○	○	○	7
Corners with small radius	●	●	●	●	●	●	12
"V" shaped speaker	●	●				○	5
Speaker adjacent to top line	●	●	●	●		●	10
Front camera on the right	●		●	●	●		8
Short speaker		●	○		○		4
Long speaker	○			●		●	5
"V" shaped microphone		●				○	3
Short microphone		○			○		2
Microphone adjacent to bottom line		●		●		●	6
Camera on the left		●				●	4
Long microphone				●		●	4
Rectangular speaker with half-circle ends					●		2
Rectangular microphone with half-circle ends					●		2
(40)	20	25	16	21	19	23	

APPLE	1	3G	4	5	5S	6	(12)
Metallic frame	●	●	○	○	○	○	8
Edges with wider radii	●	●	●	●	●	●	12
Straight top and bottom lines	●	●	●	●	●	●	12
Circular main button	●	●	●	●	●	●	12
Square form on the main button	●	●	●	●			8
Concave surfaced main button	●	●	●	●			8
Centered screen	●	●	●	●	●	●	12
Rectangular speaker with half-circle ends	●	●	●	●	●	●	12
Centered speaker	●	●	●	○	○	●	10
Front camera on the left			●			●	4
Camera aligned centrally with the speaker				●	●		4
(22)	18	18	19	18	14	15	

Apple has 7 dominant codes for the outline, 4 of which appear strongly in every iPhone product. Changes appear in frame thickness, as the products have slimmer frames after iPhone 3G. Also, along with appearance of finger print identification technology, button shapes are different in iPhone 5s and iPhone 6. Regarding the recessive codes, most of the alteration takes place with the camera positioning, while the speaker shape and the position do not change drastically.

Sony Xperia phone have 8 dominant codes, 4 of which strongly appear in every Sony product. Sony Xperia Ion has two strong codes regarding Xperia logo, which do not appear in other products. So, the other 5 models seem to have a strong consistency within them. There are 12 recessive codes for Sony, which are scattered between products, hinting that the products are mostly diversified through the recessive codes.

The DFA analysis for the LG and Samsung products are shown in the tables below.

Table 2. DFA tables of LG and Samsung smart-phones

LG	G1	G2	G3	G4	(8)
Straight top line	●	○			3
Corners with radii	●	●	●	○	7
Centered screen	●	○	○	○	5
Metal frame	○	●	○		4
Logo located above the screen	●				2
Logo located below the screen		●	●	●	6
Relatively wide screen	○	●	●	○	6
Brushed surface			●		2
Gridded surface				●	2
Curved top line		○	●	●	5
Speaker located alongside the top line	●				5
"V" shaped speaker	●	●			4
Front camera on the right	●				2
Front camera on the left		●	●	●	6
Speaker centered on the space above the screen		●	●	●	6
Rectangular speaker with half-circle ends			●	●	4
Gridded surface on speaker		○	●	●	5
(34)	**16**	**18**	**20**	**17**	

SAMSUNG	S1	S2	S3	S4	S5	S6	(12)
Straight top line	●	●		○	○	○	7
Wider bottom radius	●	●		○			5
Broad exterior frame	●	○	○		○	○	6
Metallic exterior frame	●	○	○	○	●	●	9
Rectangular main button with radii	●	●		○			5
Visible "menu" and "back" buttons	●						2
Logo located above the screen	●	●	●	●	●	●	12
Relatively wide screen		○	○	●	○	●	7
Corners with wide radii	●	○	●	●	●	●	11
Centered screen	●	●	○	●		●	9
Curved bottom and top lines			●	○		○	4
"V" shaped main button		●					2
Brushed surface		●					2
Gridded surface			●				2
Squarelike main button	●	●				○	5
Rectangular main button with half-circle ends					●	●	4
Front camera on the right	●			●	●	●	8
Speaker with filleted ends	●	●	●	●	●	●	12
Gridded surface on speaker	●	○	○	○	○	○	7
Speaker close to top line	●	●	○	●	●	○	10
Front camera on the left		●	●				4
(42)	**28**	**23**	**20**	**22**	**18**	**22**	

LG products have 10 dominant identification codes, none of which appear strongly in every LG G product. Company also has 7 recessive codes and again none of which appear strongly in every LG G product. The most reoccurring dominant codes seem to be "corners with radii"

and the codes about screen location and ratio, however it does not have the same strength in every LG G product.

Samsung has 16 dominant codes for the outline and the body of the phone. Only the code "logo located above screen" appears strongly in every Samsung Galaxy S product. "Corners with wide radii" and "metallic exterior frame" also appear in every product, but not with the same strength in each. There are 5 recessive codes identified, one of which appears strongly in every Samsung Galaxy S product. It can be said that Samsung varies its products by mostly changing the dominant codes.

8   Discussion, Restrictions and Further Studies

When results of the DFA analysis are studied, it can be inferred that the companies that have OEM and ODM history show more heterogeneous product identity than the brands that are known to have design driven innovation capabilities.

The organizations with OEM and ODM backgrounds that are examined in this study are also known to have incremental innovation characteristics. Therefore it can be said that the results of this study is in line with the research done by Dell'Era and Verganti (2007) on furniture industry. However, this study is done within generations of a single product line, where consistency between generations can be expected, in contrary to scope of the study referred. Also, the consumer electronics industry is affected by both technological innovations and meaning innovations. Thus, companies have more room for innovation when compared to industries that technology has limited impact, such as the furniture industry.

It was hypothesised that companies with OEM and ODM background would have more diversity in product identities, based on the relations made within the studies in literature. The limited research presented in this study hints that these theoretical relations may worth further explorations.

Due to the length of this study, both the theoretical base and the DFA analyses could only be discussed in a brief way. DFA analysis also can be evaluated with case examples that belong to examined companies to build stronger cases for the issues discussed. Also details such as the product visuals and definitions for the codes could not be presented here.

This study aims to discuss the relation between innovation characteristics and product identity integrity through different company types. The tendencies of companies with OEM and ODM practices are discussed through the literature, while their product identity integrity is examined through DFA studies. The results of the DFA studies seem to support theoretical explanations about tendencies of these companies, but for further proof, deeper studies should be conducted.

In further studies, strategic and cognitive explanations for the relations of innovation capabilities and product identity integrity can be sought through case studies. The actions and strategic preferences of selected companies can be studied in an effort to examine theoretical linkages between innovation characteristics that are briefly discussed in this study.

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