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IMPACT OF NATIONAL CULTURE ON FACTORS AFFECTING PRODUCT DESIGN

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ABSTRACT
This study aims to emphasize through research backed evidence, the fact that product design is greatly influenced by national culture and hence global companies need to adapt their products depending on the culture prevailing in the local markets.Through a literature survey, this paper intends to examine how differences in national culture (based on Geert Hofstede's cultural dimensions) affect people's perception of a product.This paper will provide a basic understanding on how each of these cultural dimensions influence the acceptance of a particular product or service in the market by citing findings of relevant studies and surveys and subsequently providing rationale of the conclusions through consistent inferences.After an in-depth study of findings from several studies on design of various products a significant relationship between product design and the culture component in the country has been established. Further,in this study it is explored how the culture affects the introduction of the product,it's design, and it's adoption in the new market.

Keywords:National Culture, Product Design, Hofstede, Power Distance, Masculinity, Uncertainty Avoidance, Long Term Orientation, Individualism.

1. INTRODUCTION

1.1 Reasons for Study

Product design is the process of making a new product to be sold by a business to its customers. The development of technology is converting the world into one global market. Even within a given demographic there are several prevalent sub-cultures. With globalization on the rise it has become more and more important for companies to realize that for expansion they need to turn to international markets. There are several hurdles when introducing a new product in a country with different values and customs. There have been several cases where products of multinational companies have failed in international markets despite doing well in national markets. Companies are continuously attempting to expand their markets and in that attempt they have often entered the wrong market with the wrong product. The reason being they haven't accounted for the fact that differences in national culture affect the buyer behaviour as people are from different demographics and hence different cultures expect different things from a product.

Due to this relationship between culture and product expectations companies need to adopt cross cultural strategies to adapt to the new market environments by changing their approach in management, marketing, research and advertisement. Thus it is important for product managers to have a proper grasp of the culture of the market and society before making projections of a products penetration and diffusion in a market.

Companies planning to introduce new products in more than one country must gather and understand consumer behaviour of that culture to avoid drawing erroneous conclusions. Understanding the effect of cultural variations on the adoption of new products in a specific country will help management in the forecasting the acceptability of the product in the perceived uncertainty of foreign cultural environments.

In this study Hofstede's framework has been adopted to comparatively analyze how product design can be influenced by national culture by conducting a literature survey various papers relating to the topic.

This paper compares the results and analysis of various studies related to the cultural dimensions and product design and therefore provide an overview of their findings. Eight of them were research papers that had done a case study of a product in a particular market.

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2. LITERATURE REVIEW

Product design is the process of new product development to be introduced in a market. National culture is one of the predominant determinant of new product success (Lee, Ellen, Lerman 2007). Hofstede (2001) defined national culture as the 'collective programming of the mind which distinguishes the members of one human group from another.' This report aims to provide a coherent connection between product expectations and national culture. The importance of new product design and culture is evident from the case of Kelloggs. Kelloggs had problems introducing their product in India because they failed to anticipate the culture prevalent in India(Vignali, 2001). Thus it is important to review the culture of the demographic before entering new markets. For that a framework is needed that quantizes different aspects of national culture which in itself is such a abstract concept. There is a necessity to adopt a framework for comparative study and thereby linking product design and a country's culture.

There have several authors that have studied national culture in a management viewpoint, however Hofstede framework is considered the most established for this study's requirements (Wehnert 2009). Hofstede's cultural dimensions framed on basis of extensive data collection are not only strongly convergent when it comes to culture (Magnusson et al. 2008) but also are considered adaptive and progressive, ready to accommodate new concepts(Minkov, Hofstede 2009).

Therefore it was decided to adopt Hofstede's five cultural dimensions to analyze the effect of product design. Hofstede's five dimensions based on which cultures of different nations differ are power distance, uncertainty avoidance, individualism, masculinity, and long term orientation. To conduct the review comparative studies of consumer behaviour and their impact on new product development were reviewed.

2.1 Power Distance

Power distance is defined as "the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally." (Hofstede,2011).

Power Distance affects different phases of product design in different ways. Yalcinkaya's (2008) paper on product design and diffusion puts forward a hypothesis that power distance is related to consumer behaviour when it comes to the buying of new products. High power distance societies are often segregated by financial status and status within the organization. The bosses have a lot of influence over the lower classes and therefore impact what products they buy. Therefore one could hypothesize that product design is largely dependent on the needs and wants of the upper classes in high power distance societies. Also, since the lower classes have a tendency to adopt products their superiors have and hence restrict their choice of products. This stunts the diffusion of the product in the market (Yalcinkaya 2008).

Also another factor affecting product design internal to the organization is the unquestioned acceptance of the bosses policies and behaviour due to power distance. When upper management interferes with the technical team specializing in product design their suggestions are adopted no matter how improper they might be. (Simpson et al. , 2002)

Product design has two phases, the initiation and implementation phase.(Nakata, Sivakumar 1996). In the initiation phase employees and product designers come up with ideas for new products and test out the feasibility of the idea. In the implementation face they execute tasks over a time period to develop and market the product. With respect to creating new products cultures can be either initiating or implementation efficient. During initiation highly individualistic cultures that score low in uncertainty avoidance and power distance tend to do well. Low power distance cultures have higher propensity to innovate(Singh, 2006). In addition, since nations with low power distance values have more innovative technologies and have social structures more likely to support the technological momentum of change, it is expected that low power distance societies will more readily adopt information technologies (Bagchi, Hart, Peterson 2004).

However, in case of the implementation phase the reverse is true as high power distance provides structure to the organization and hence smoothens the implementation process. Companies across countries have been engaged in alliances for the development of products together in order to play their strengths. The initiating culture would provide the idea and set the project in motion while the development and testing of the is taking care by a implementing culture. An evidence of this is clear when two large pharmaceutical companies, Searle of the United States and Sankyo of Japan, planned to co-create a new ant platelet agent. It was decided that Searle (an initiating culture), would provide the original technology while the development would be handled by Sankyo (an implementing culture) (Nakata, Sivakumar, 1996).

A study (Sharafutdinova, Salmi 2008) conducted on the mobile phone market in Russia showed that mobile phones are viewed by Russians as a family object and hence an important mean of signifying status. Therefore there exists a distaste for mobile phones with improper finishing or fake looks. Russians also look for high durability as the usage cycle of these phones is around 3.5 years. This clearly collaborates with Hofstede's study where Russia scores high in power distance (93) and uncertainty avoidance (95) and low in individualism(39) as the phone is viewed as a family object.

Studies show that power distance can easily be related to product service expectations too. Low power distance cultures expect quality and responsiveness from service providers while low individualist cultures expect empathy and assurance from service providers. Also, there is empirical data supporting that people in high power distance societies are more tolerant towards reliability as compared to low power distance cultures. (Dash, Bruning, Acharya, 2009)

Further, study management styles concerning product design were studied. One of the more popular management techniques is Total Quality Management which includes empowerment of employees, organization wide continuous improvement, and customer satisfaction. The empowerment of employees directly correlates to power distance. To make customers happy employees need to have a certain amount of discretion which can only be provided with low power distance index. Similarly customer satisfaction includes building trust among employees and customers which can be seen in cultures high in femininity (Wehnert 2009).

2.2 Uncertainty Avoidance

Further it was analyzed how uncertainty avoidance index of a particular country reflects on product design and consumer behaviour. According to Rogers, "uncertainty implies a lack of predictability, of structure, of information" .Uncertainty avoidance "deals with a society's tolerance for ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations"(Hofstede 2011). It shows the extent the people in a culture go to avoid unforeseen situation. It is a measure of their need of security. However, it should not be confused with risk management or inability to take risks. Managers may make decisions involving higher risks to avoid uncertainty (Hofstede 2011).

In a study which compares German and US technology firms it is seen that Germans score higher on the marketing skill factor(Simpson et al. 2002). This is because Germans put a lot of effort in market research and forecasting to avoid uncertainty thus improving their overall management skills. Thus German cultures spend more time than US companies in the product initiation phase. Subsequently the product uncertainty is low. Consumers perceive products having low uncertainty as better quality than products having high uncertainty (Lee et al.2007).

Another paper perceptions (Lee et al. , 2007) on uncertainty avoidance(UA) affecting product has reviewed a few studies on the topic and found that low consumer innovativeness caused by high uncertainty avoidance index and individualism is inversely proportional to the penetration of high tech products, product diffusion and innovativeness. As consumers are not inclined to try out new things, new products are found hard to sell at first.

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When there is a new product in the market there is a certain amount of uncertainty that comes with it. If this product uncertainty is high in a high uncertainty avoidance culture then the penetration of that product in the market will be low. This is why the Disneyland in Paris didn't make a profit for several years. However China being relatively low in uncertainty avoidance when compared to France(86), the Disney theme park in Hong Kong seems to be doing better.

To avoid uncertainty, high uncertainty avoidance cultures adopt different strategies. Japanese firms develop products from localized technical knowledge and test them out in low demanding markets and as the product experiences are accumulated the product is revised and introduced in the markets having higher margins(Song and Parry 1997).

Cultures practicing high uncertainty avoidance have a tendency to neglect damage control when one of their product fails. Thus when Toyota had a faulty design in one of their models the company couldn't nip the crisis in the bud leading to several deaths.(Huffington Post, February, 2010)

2.3 Individualism Vs. Collectivism

The following study then investigates how individualism affects new product development. According to Hofstede (1991), "individualism" is the degree to which people in a country prefer to act as individuals rather than as members of groups. Individualism is a characteristic of a culture where people express their own opinions and are concerned for only themselves and their immediate families. Collectivism is often characterized by teamwork and concern for other members of the community.

Individualistic societies focus on creativity, individual responsibility and independent decision making while collectivist societies focus on cooperation, collective responsibility and collective decision making which often leads to groupthink (Tata and Prasad, 1992).

A culture's score on individualism affects product perceptions and therefore it's design. A product that appeals to individualistic benefits and is advertised so is tends to do well in countries scoring high in individualism (Zhang and Neelankavil, 1997).

A significant observation is that empowerment of employees is seen predominantly in collectivist cultures which further collaborates with the hypothesis that low power distance often goes hand in hand with high individualism(Wehnert 2009). Even though intuitively it may seem that employee empowerment is positively affected by individualism it is not so. A comparative study done on cultural differences and quality practices between Korea, USA, Mexico, and Taiwan (Yoo, Rao, Hong 2006) show that cultures of Korea and Taiwan which are predominantly collectivist have a significant impact on empowerment. Groups have a greater extent of team empowerment in terms of flexibility, and capability because each individual is willing work towards the overall team goals at the expense of individual interests.

There have been connections made between individualism and brand loyalty. Initially research proved that cultures scoring high on individualism have a tendency towards brand loyalty as they remain unaffected by others' point of view(Lam, 2007). From this it is also reasonable to infer that publics in nations with high individualism have more purchasing power and are more aware of product range.

However an analysis of Taiwanese and American consumers shown that collectivist cultures inculcate the feeling of loyalty due their inherent need for belongingness. Therefore, there hasn't been a consistent conclusion made between the relationship between individualism and brand loyalty although it seems to affect it in some way or the other (Yoo-Kyoung, Chen 2011).

2.4 Masculinity

Masculinity is another feature which has an impact on new product development. Masculine cultures' values are competitiveness, assertiveness, materialism, ambition and power, whereas feminine cultures place more value

on relationships and quality of life. In a masculine society there is maximum emotional and social role differentiation between genders whereas in a feminine society the opposite is true (Hofstede, 2011).

A study in total quality management has shown that feminist cultures are strong in negotiation and conflict management (Hofstede , 2001). One can say that in feminist cultures have the upper hand when it comes to service industries as communication and service in these cultures is valued. Thus a consumer when buying a product looks at customer service. Feminine cultures are likely to excel in service industries like consulting, transport and manufacturing, according to customer specification while masculine cultures do better at large scale volume production(Wehnert 2009).

New product development does better in cases of masculine cultures. This is because designers push themselves into innovating better products that are better than the rest in the market. Another paper suggests that masculinity brings with it purposefulness and formalization (Nakata, Sivakumar 1996) and these both traits are useful in developing new products. This paper has reviewed several theories that tell us that setting clear goals and objectives and formalization of the process facilitates new product development.

However other studies show that feminity builds a supportive environment by infusing trust and team spirit among employees which helps in new product development. Organic structures are best suited for innovation. Chakrabarti's (1974) study of NASA concluded that the 'warm' climate was directly related to successful projects.

A paper (Yalcinkaya 2008) proposes that new product diffusion in the market is better in masculine cultures as people in masculine cultures look forward to new innovations to set themselves apart. Due to a assertive and competitive society people always strive towards innovation. Thus new products are easily welcomed into the market. Feminine cultures on the other hand do not focus on recognition but rather on intuition and modesty. Therefore one can infer that feminine cultures adopt products at a slower rate.

However, the adoption of a product depends largely on the type of product it is with regard to masculinity/feminity. Consumer level innovativeness is higher in more masculine cultures(Lee et al. ,2007).

Although masculinity promotes innovation and assertiveness the cost of the product may weigh heavily on the managers mind. Whereas in a feminist culture if the product improves quality of life it is readily accepted. A paper on IT product adoption suggests that since IT improves communication it is better adopted in feminine culture than in masculine cultures even though masculine cultures are more motivated to achieve a competitive edge. It also suggests the cell phone adoption is better in feminine cultures due to quality of life implications (Bagchi et al. , 2004).

2.5 Long term Orientation

The fifth dimension of Hofstede's cultural dimensions, 'short-term vs. long term orientation' was introduced later based on the survey of 22 countries. It is also referred to as Confucian Dynamism.

Traits predominant in Confucian culture have been grouped into either short term behaviour or long term orientation. The several aspects of long term orientation of a particular country include perseverance, work ethic, thrift and having a sense of shame while short term orientation encompasses traits like saving face, focus on steadiness and stability, reciprocation of gifts and favours and respect for tradition(Venaik, Sunil; Zhu, Yunxia; Brewer, Paul 2013). However a critique of Hofstede's fifth dimension suggests that some of these traits may not necessarily correlate with the orientation they are grouped under **(**Fang, Tony,2003). Another study says that the survey based individualism index of the countries on traits that are closely related to short term orientation. Thus there is a inherent interdependence of short term orientation and individualism(Yeh, Ryh-song; Lawrence, John J,1995).

When it comes to consumer behaviour short term oriented communities succumb to conformity due to their inclination to save face. A survey conducted in Korea shows that saving face and conformity, both traits of short term oriented cultures incline customers towards buying domestic products **(**Chung et al. , 2000).

Saving face means avoiding embarrassment and preserving a notion of self respect. When it comes to product design short term oriented cultures which are predisposed towards saving face are likely to be susceptible to sunk cost errors(Nakata, Sivakumar, 1996). Once a manager invests in particular project, he will not back down easily even if there are feasibility issues or if the project turns out to be impractical, as he would be afraid of 'losing face'.

Japan scores high in long term orientation. Honda introduced 113 new motorcycle models in an 18-month period, becoming the market leader. Work ethic as seen in long term oriented cultures is positive force in long term orientation. Improved service and product quality are essential in bagging long term customers. Even companies in long term oriented cultures are capable of change and modify products according to consumer necessities (Ganescu et al. , 2014).

3. CONCLUSION

Findings of the literature review were mostly found consistent with what Hofstede's cultural dimensions proposed. Therefore inferences were drawn when consistent trends were seen about which factors involving product design would thrive in certain types of markets.

Table 1: Inferences

Hofstede Dimension	High	Low	Comments
Power Distance	High power distance cultures prefer products that signify status Implementation of product design and plans is better done high power distance societies due to prevailing formalization.	High tolerance towards reliability. The propensity to innovate is higher. Service expectations are higher in low power distance countries.	The correlation between power distance and brand loyalty varies with each culture. As a dimension high and low power distance differently impacts product design.
Uncertainty Avoidance	High uncertainty avoidance cultures will invest a lot of time and energy in market research to ensure that the product will do successfully. High uncertainty avoidance cultures prevent entrepreneurship as they are characterized by consumers that are skeptical of new products in the market. High uncertainty avoidance puts better quality products in the market They have .low tolerance towards durability.	Entrepreneurship thrives in cultures with low uncertainty avoidance as there people are ready to take up new designs and ideas and implement them. Customers are ready to try out new products in the market even if they are not sure whether the product will meet their expectations Acceptance of products and their range is better in low uncertainty avoidance cultures.	Uncertainty avoidance index of a country directly reflects on the time taken by a company in implementation of the product.
Individualism	Individualistic cultures hamper development and improvement of product design simply because new product adoption is slow. Individualist cultures are suited to bring forth new ideas for product design.Initiating cultures thrive in cases on high individualism	Low score on individualism implies collectivism. Product Adoption is relatively faster. They are more capable of implementation of an idea. Implementation cultures tend to be more collectivist.	There is a distinct relationship between individuality and power distance. Cultures showing low individuality (<35 on the Hofstede scale) score double or more in power distance. Similarly cultures having a low power distance index(<35) score double or more in individuality.

Masculinity	Highly masculine cultures are formalized and self motivated towards innovativeness due to the prevailing competitive spirit. Product adoption is faster in the market.	However it is also seen that feminine cultures foster new product development by building a supportive environment through team work and interpersonal communication. Product adoption is slower in the market.	The correlation between masculinity and new product design is not coherent.
Long Term Orientation	Work ethic, ability to change and innovate are traits of long term oriented cultures which are generally more effective in introducing products in the market.	Short term oriented cultures prefer stability and often are victims of groupthink due to concerns of 'saving face' and therefore not very effective in implementing new product design.	Also termed as Confucian dynamics, most of the traits helping project design and diffusion are grouped in long term oriented cultures.

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5. REFERENCES

1. Bagchi, Kallol; Hart, Paul; Peterson, Mark F, 2004. *"National Culture and Information Technology Product Adoption'*. Journal of Global Information Technology Management. 29-46
2. Song, X Michael; Parry, Mark E, 1997. *"A cross-national comparative study of new product development processes: Japan and the United States"*. Journal of Marketing 61.2
3. Sangeeta Singh, Department of Marketing, 2006. "*Cultural differences in, and influences on, consumers" propensity to adopt innovations"*. International Marketing Review 23.2.
4. Yoo-Kyoung Seock, Chen Lin, Department of Textiles, 2006. "*Cultural influence on loyalty tendency and evaluation of retail store attributes: An analysis of Taiwanese and American consumers*". International Journal of Retail & Distribution Management, Vol. 39 Iss: 2
5. Yong Zhang, Frank G. Zarb, James P. Neelankavil, Frank G. Zarb 1997. "*The influence of culture on advertising effectiveness in China and the USA: A cross-cultural study"*. European Journal of Marketing 31.2.
6. Goksel Yalcinkaya, 2008. "*A culture-based approach to understanding the adoption and diffusion of new products across countries*". International Marketing Review 25.2.
7. Dong Kyoon Yoo, S. Subba Rao, Paul Hong 2006. *"A comparative study on cultural differences and quality practices – Korea, USA, Mexico, and Taiwan*". The International Journal of Quality & Reliability Management 23.6.
8. Satyabhusan Dash, Manaswini Acharya,2009. "*The effect of power distance and individualism on service quality expectations in banking: A two-country individual- and national-cultural comparison"*. The International Journal of Bank Marketing. 27.5.
9. Lee, Julie Anne; Garbarino, Ellen; Lerman, Dawn 2007. "*International Marketing Review . How cultural differences in uncertainty avoidance affect product perceptions"*. International Marketing Review 24.3.
10. Ulrich E. Wehnert. "*Implementing TQM Cross culturally."*
11. James T. Simpson, Christine Kollmannsberger, Helmut Schmalen, David Berkowitz(2002). "*New product development in German and US technology firms."* European Journal of Innovation Management, Vol. 5 Iss: 4.
12. Nakata, Cheryl; Sivakumar, 1996 . "*National Culture and New Product Development*" : K.. Journal of Marketing :An Integrated Review. 60.1.
13. Salmi, Asta; Sharafutdinova, Elmira. 2008. "*Culture and Design in Emerging Markets: The Case of Mobile Phone Design in Russia"*. The Journal of Business & Industrial Marketing. 23.6.

14. Peter Magnusson, Rick T. Wilson, Srdan Zdravkovic, Joyce Xin Zhou, Stanford A. Westjohn, 2008. "*Breaking through the cultural clutter: A comparative assessment of multiple cultural and institutional frameworks"*. International Marketing Review. Vol.25Iss: 2.
15. Michael Minkov, Geert Hofstede, 2011,. *"The evolution of Hofstede"s doctrine- Cross Cultural Management"*.. An International Journal.
16. Fang, Tony 2003. "*A Critique of Hofstede"s Fifth National Culture Dimension*". International Journal of Cross Cultural Management : CCM 3.3
17. Venaik, Sunil; Zhu, Yunxia; Brewer, Paul 2013. "*Looking into the future: Hofstede long term orientation versus GLOBE future orientation"*. Cross Cultural Management 20.3
18. Yeh, Ryh-song; Lawrence, John J. , 1995. "*Individualism and Confucian dynamism: A note on Hofstede"s cultural root to economic growth*." Journal of International Business Studies.
19. Chung, Jae-Eun; Dawn Thorndike Pysarchik 2000. "*A model of behavioral intention to buy domestic versus imported products in a Confucian culture"*. Marketing Intelligence & Planning.
20. Ganescu, Cristina; Gangone, Andreea; Asandei, Mihaela. Amfiteatru 2014. "*Assessing the impact of the national cultural framework on responsible corporate behaviour towards consumers: an application of Geert Hofstede"s cultural model"*. Economic , (Feb 2014).
21. Vignali, Claudio, 2001. Kellogg's - *"Internationalisation versus globalisation of the marketing mix"*. British Food Journal 103.2 : 112-130.