



Review

Strategy for Cultural Inclusion in New Product Development Processes: A New Zealand Study

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Abstract: Cultural inclusion generates a positive impact by socially increasing pride for individuals or economically increasing a country's global capital. Currently, in New Zealand (NZ), not many strategies exist that ensure inclusion of culture in new products introduced locally and globally. Further, cultural inclusion in products appears highly represented in the tourist markets, but not so much in the domestic markets. This paper examines the current NZ strategies for cultural inclusion in product development of different sized companies that supply locally and globally through three case studies and compares the findings with theoretical models used in other regions. Findings elaborate that NZ lacks in documented standardized strategies when it comes to cultural inclusion. A positive impact of having such a strategy is perceived by participating companies with a culture for open innovation to ensure they are following a process approach that can help include cultural aspects appropriately. Creating a unique position for the brand globally, increasing global capital and deeper connectivity, and increasing the understanding of culture were some key benefits identified. However, a few steps in the new product development process were found largely lacking in NZ firms, such as communication with cultural representatives and leaders. A cultural inclusion model is developed based on the study findings to include an open innovation culture that can help NZ companies be more inclusive in their design and establish a unique NZ market for generating positive impacts.

Keywords: cultural inclusion; new product development; open innovation; product design; strategy



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1. Introduction

Culture is everywhere around us. Diversity is steadily increasing as migration of people these days has increased relatively in a greater variety of ways than it has ever before [1,2]. With the increase of diversity, we observe an increase in the need to include and adapt different cultures. To include migrants, we must master the inclusion of the residence first. Culture is generated from human systems [3,4]. It ties many aspects of people and their society together, such as in customs, arts, beliefs, capabilities, and habits so as to encapsulate a group's norms and social behavior. The dynamics of the environment or members of a group are where inclusion is factored in [5]. Inclusion ensures equal opportunities between all segments of a group. In the context of this paper, inclusion is referred to in terms of cultural inclusion. This conveys that each culture in a set environment has equal opportunities to include and share their culture while feeling welcomed to do so. The environment in this scenario is the field of product design. In New Zealand (NZ), we have beautiful multi-cultured groups and people, with the Maori culture being the culture of the indigenous people. NZ is also known to have a role in product design, as it has many organizations of different sizes that export products locally and globally. Opening the doors to include culture in design welcomes a larger opportunity for innovation. From a consumer perspective, it generates a feeling of inclusion and the sensation of being represented in a different environment. The need for innovation is driven by consumer demand but enhanced by employees, customers, suppliers, and intermediaries through

an open innovation culture [6]. Not every corporate culture is a suitable environment for open innovation [7]. Information sharing and communication through digital platforms can enhance development of an open innovation culture [8].

A strategy in new product development is known to be nested within a corporate environment to influence its nature and direction in order to obtain a positive outcome [9,10], as well as being able to replicate successes by decreasing uncertainty in the process. Low innovation occurs in countries that have a tendency of high uncertainty avoidance [11,12]. Thus, the formation of a cultural inclusion strategy in NZ would encourage higher levels of cultural innovation. Currently in the literature, no strategies exist for NZ companies to adopt culture in their product design, which generates the aim of this paper to create a strategy for cultural inclusion in NZ products. In answering the research question, this paper seeks to investigate how cultural inclusion as a strategy can positively impact new products introduced locally and globally.

To investigate these aspects, three case studies were conducted in companies of different sizes with varieties of exportation methods locally and globally. Insight was gathered from the companies on their current processes and beliefs to include culture in product designs, as well as the significance of developing a strategy to positively impact their future integration of culture into products through open innovation. The strategy is guided by two Taiwanese frameworks for cultural inclusion developed by Lin [13] and Hsu [14].

This paper aims to contribute to academia by increasing research available on cultural inclusion in product design, as well as strategies available to help refine and develop practical applications of cultural inclusion in generating positive impacts for both consumers and companies.

This first section has introduced the study. The following section reviews the findings from the literature regarding cultural inclusion in products and available frameworks. Section 3 outlines the methodology that is used to conduct the research. Section 4 portrays the findings found from the research. Section 5 discusses the findings in relation to the literature. Section 6 presents the study conclusions, its implications, limitations, and future potential continuation of this research.

2. Review of the Literature

2.1. What Is Cultural Inclusion and How Does It Achieve Advantage?

Cultural inclusion has three dimensions: representation, participation, and access [15,16]. Representation is defined as a culture being represented in mainstream culture. Allowing an individual or group to be involved in the cultural processes represents participation. Appreciating and enjoying the cultural processes is defined as access. Inclusion is not an absolute or abstract quality [17]. Thus, the measurement of cultural inclusion can only be conducted through specific cultural relationships that are tailored differently to each culture.

Cultural inclusivity for individuals of minority cultures helps advantage pride in their unique perspectives. From an organizational perspective, cultural inclusion achieves an advantage by improving the company's image and creating a supportive working environment [11]. In terms of product, design advantage is achieved by adding value. Due to predictions, cross-cultural design in modern products will be a trend in the global markets due to the inclusion of unique design [13].

The study by Chai et al. [18] demonstrates that, in cultural product design, two areas should be prioritized: better-designed perception of cultural products and the modern methods of presenting cultural elements to achieve better cultural inclusion advantages.

2.2. How Not to Appropriate Culture in Design

Appropriate, which comes from appropriation, is defined as the process of possession [19,20], making the belonging of a group or individual the property of another group or individual. In terms of cultural appropriation, it is when a group takes or borrows cultural strategies from a cultural background that is not their own and uses them without

giving credit or recognition to the original culture [21]. Cultural appropriation can lead to distortion of meaning and cultural practices of the original group. It is seen as disrespectful and disadvantages minority groups.

In NZ, intellectual property is one way to ensure not appropriating culture. An even easier method that is strongly recommended is communication and co-design with cultural communities to share design information through a culture of open innovation [22]. Due to computerization and globalization, communication has changed towards a more technology-based approach in open innovation [23]. Thus, normalizing technology communication in cultural collaboration through an open innovation culture would be very sufficient for companies [24]. Appropriation often occurs when there is no existing tool for a task [25,26]. Thus, having a set strategy for an open innovation culture or system can help decrease its negative impacts [27].

2.3. Market Availability of New Zealand Cultural Products Locally and Globally

NZ globally has developed a strong brand for products in terms of representing a product with the caption “100% Pure New Zealand”. This relates to the image of NZ as an unspoiled landscape that provides an authentic experience [28]. Emphasizing the country’s green and clean reputation. Thus, most NZ products that are globally distributed appear to convey nature design, rather than traditional or distinct Maori designs in their products. The global capital supports the mechanism of economic and cultural production that is first to start [29,30]. This indicates that the introduction of unique culture to designs can help add value in the global market by increasing global capital as it currently rarely exists. It is also mentioned that, in today’s aesthetic economy, the main step to economic development is through the promotion of cultural applications [14].

Locally, from the perception of tourists who are coming to NZ, they generally search for authenticity and cultural connectivity to the environment [31,32]. Having a product incorporating the local culture helps capture that experience in a materialistic form, which is easily portable and can withhold a lifelong memory. Maori design products are therefore key in the tourism industry. An international NZ visitor survey was distributed back in 1995–1996, which highlighted that nearly half the population of international visitors attended an art gallery or museum to learn about Maori culture [33]. This does not only show the prime marketing location for cultured products, but also the interest available in the local culture from global visitors. Currently, the market availability for tourist-attracting Maori products is available in museums, airports, art galleries, specified tourist stores, and I-site information centers. But, it is not integrated as strongly in our everyday markets, such as grocery stores and malls. The current domestic market in NZ is heavily dependent on North European and North American customers. This is the case due to NZ having a finite market, whereas the risk with Maori-based design is overproducing for a smaller target market and facing financial viability [34]. There is very little research undertaken in NZ investigating the Maori appeal in product design in the domestic market. Locally, the perception of how locals would feel in more domestic Maori design inclusive products is not very clear. Additionally, whether European and American markets are preferred due to the modernization of design is considered. There is a need for a framework to modernize Maori design to make it more appealing to the market. Products in the global market are losing identity due to similarity in function and design [13]. Adding cultural identity would thus increase value, as it would act as a point of difference.

A current market trend is creating environmentally friendly products to achieve a competitive advantage. It has become the largest opportunity and challenge for existing companies [35]. This highlights another area that lacks research that could be a contributing factor to the increase in the demand for Maori design in the domestic market. There could be a correlation between Tikanga’s (protocols defined as doing what is right [36]) sustainable development, Kaitiakitanga (guardianship that can be achieved by an individual or group promoting preservation of the environment and careful use of natural resources), and the current trends of sustainable products. The current market in NZ is increasingly more

aware of climate change than it has been in the past [37], causing sustainability to trend. This is now a large focus in the current NZ organization practice and design [38]. A study by Collins et al. [39] showed that the key adoption for sustainability was due to the beliefs and values of senior management teams in NZ firms. Thus, would larger inclusion of Maori values influence product design?

2.4. A Model for Cultural Inclusion in Product Design

A model for cultural inclusion in product design in Figures 1 and 2 is a combination of two frameworks by Lin [13] and Hsu [14]. The two frameworks have been adapted from the Taiwan aboriginal culture that applies cultural inclusion processes in product design through open innovation. Commonalities of the four main constructs—investigation, interaction, and objectives, development and analysis, and implementation of product design—from the original models are combined, with summarized information placed into their respective phases. Both models had a lot in common with extracted cultural features for traditional cultural products and artefacts. Both models cater to global and local distributed products, and due to the generic requirements that are specific to product design, these models can be applied to any sized business that works on developing a product. There are no NZ-based cultural models available in the literature for cultural inclusion in product design.

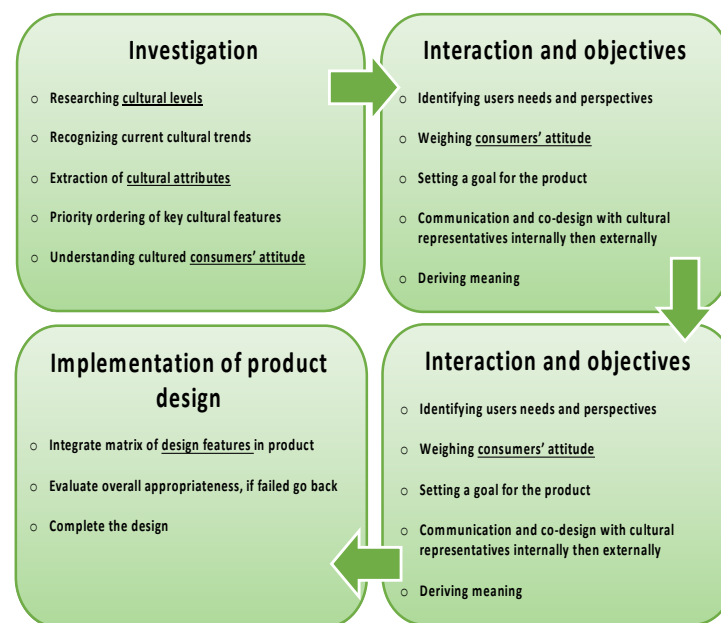


Figure 1. A model for cultural inclusion in product design. Source: Lin [13] and Hsu [14].

The model in Figure 1 has been developed to be intuitive for product designers, not needing much additional support to follow through for successful integration of cultural inclusion in their designs. To assist the designers and strengthen the model, an expansion of the definitions table derived from the original model is presented in Figure 2. These definitions of processes help designers in generating a clear understanding of the framework and its boundaries. The definitions are directly linked to the model in Figure 1 and are underlined for ease of communication. The designers can choose what is appropriate to incorporate from the definitions, which also assist them in simulating ideas on where to start and what to include.

The model is linear, where one phase must be completed in order to move to the next. It is important to have a holistic completion of each phase to ensure that the cultural feature is translated in a positive manner. The first phase investigation focuses on researching and extracting culture to suit consumers' needs, which are identified by recognizing trends, such as technology applications, social trends, and economic development. In the second

interactions and objectives phase, a designer would start by targeting the consumer by identifying their needs and backgrounds. This is followed by describing the purpose to stakeholders to ensure appropriate and meaningful design. Finally, in the second phase, it is important to establish the direction by creating specifications and goals that align with the consumer's needs and to communicate the findings to cultural representatives. The third phase is development and analysis, which starts by analysing the culture by creating a matrix table to identify the cultural attributes to be included in the design. This is followed by sketching the primary design and describing the product performance, as well as ensuring that the meaning is being translated correctly when converted to product form. The final stage of implementation is developing the concepts by integrating cultural meaning from the matrix of cultural features. Then, the next process involves completing the design, where examination of cultural product features is proven to be appropriate through evaluation, otherwise it involves iterating back phases to try again. The overall framework comprised of the model in Figure 1 and the table in Figure 2 will guide the investigation of cultural inclusion in product design in this study.

| Consumers Attitude | Cultural Levels | Cultural Attributes | Transformation | Product Semantics | Design Features |
|--|--|---|--|---|--|
| <ul style="list-style-type: none"> Understanding of tribal culture The significant feature in culture The appropriate types of products in relation to the culture Users' demand for culture in design place | <ul style="list-style-type: none"> Physical Material Social Behavior Spiritual Ideal | <ul style="list-style-type: none"> Tribe Object Type Image Material Color Characteristic Operation Pattern Form grammar Form construct Formation Using scenario Cultural content Resources | <ul style="list-style-type: none"> Generating a matrix table to identify original cultural features Describing product features with reasonable connections It will be processed back and forth between cultural analysis and design concepts Assessing, selecting, and integrating semantically feasible manifestations into expressive wholes. | <ul style="list-style-type: none"> Metaphor Simile Metonymy Analogy Allegory | <ul style="list-style-type: none"> Color, texture, appearance, pattern, form, lines, details, elements Function, operation, usability, safety, joint relationship Special meaning, storytelling, affection, cultural features |

Figure 2. Expansion of definitions in the above model.

2.5. Literature Gaps Identified

In the literature, a deeper understanding of culture has been explored, as well as its significance to NZ, and the identification of Maori culture was determined as the most unique to NZ [33]. It has been proven that the inclusion of culture in design adds positive impact through identity and economic development [29]. There are many gaps that exist in the current literature. Starting with the lack of representation of Maori design in non-tourist products, and whether this is due to the lack of modernization processes available or the lack of frameworks for efficient design cultural inclusion, is considered. The measure of how successful the need to include Maori designs has been is also very absent in research. A question raised, as well, is whether new sustainability trends in the market will trend Maori design due to its sustainable value of Tikanga. To address these issues and questions, a sufficient model for cultural inclusion must first be designed to be put into practice in order to test and address all other issues with proper data, experimentation, and feedback. The model must also be in line with NZ practices. In assistance towards answering these questions, an investigation must be carried out on the simplified research model adapted through the literature to (1) see how this model compares to the new product development (NPD) strategies currently being carried out in NZ companies and to (2) address the overall question of how cultural inclusion as a strategy can positively impact new products supplied locally and globally.

3. Research Methodology

In this research, case study methodology was used to justify why a set of decisions were taken, how they were implemented, and what was the result [40]. Using this methodology allows for investigation of a case in a real-world context, in this case being NZ. Due to the research being distinctive to NZ cultural inclusion in products, this method allows for multiple variables of interest [41]. This methodology also benefits from being able to use existing models to guide data collection, analysis, and design, as well as to capture insights through multiple sources of evidence [42], which will help justify the relevance of the final solution.

3.1. Case Study Company Selection Criteria

1. The company should be a manufacturing organization located in NZ.
2. The company must use cultural design in their product or product branding.
3. The company must export locally and/or globally.
4. The participant interviewed must possess a product development, design, or engineering role.
5. The participant must have first-hand design input within a product.
6. The participant must have at least one year of experience working with the company, as that is sufficient time to be comfortable in the role.
7. One company should be large and the other two small to medium enterprises (SMEs) to capture insights from varied firms.
8. In each company, at least one participant must be interviewed.
9. The company should have a good understanding of NZ laws and intellectual property.

3.2. Data Collection

Six semi-structured interviews were conducted to collect data from three manufacturing firms that were selected based on the above criteria. The interviews were single-person and face-to-face. The location of the interviews depended on the company's location, being in the Auckland or Waikato region. For the company located in Auckland, the interviews were held in the company's meeting offices. In the case of the company in the Waikato region, an online interview was held through the Zoom computer application.

The questions were developed to address the objectives of this research based on the literature review findings and through gaps found in existing knowledge. The questions related to the current practices of cultural inclusion in products of the case companies and if any models were currently used were proposed. Before collecting the data, it was ensured that a firm grasp of knowledge of the NZ culture and product cultural inclusion was achieved through reviews of the literature. Open-ended questions were asked to enable better understanding of the processes and to observe correlations in their practices [43]. Practical analyses of existing models were put in practice for their current developed product to see if they were applicable in adding positive impact to their design.

During the interviews, notes were taken to answer questions in summary and to make general meeting minutes. The interviews were vocally recorded with the permission of the participant to ensure details were not left out. Ethical considerations were followed, maintaining the confidentiality and anonymity of the participants and their firms. Each interview lasted about 45 min.

3.3. Data Analysis

After the collection of data, a thematic analysis was carried out [44], which was applied to the answers received in the interviews in relation to the defined case study research questions. This approach helped in the separation of data and in the evaluation of each area separately to break down the relevance of existing models through their individual phases. The model adapted from the literature (Figures 1 and 2) was used to provide analytical guidance. Findings were combined in each theme of information with an existing phase in the model to ultimately create one ideal model for cultural inclusion in product design.

Defining the ideal model included an effective process in translating culture to design in an appropriate and inclusive way, which emerged from the case study findings.

3.4. Ethical Considerations

All participation in this research was completely voluntary and during any time the participants had the right to stop, leave, or ask for their information to no longer be used. It was ensured that the interviewed participants were aware of the interview format. Permissions were taken for the recording of the interviews and to use all findings for research purposes.

In the analysis and final stages, there was no disclosure of names of the companies and products. Pseudonyms have been used to refer to them that have no relevance to the companies in any way. The participant names have also not been disclosed. For the safety of the participants and the researcher, COVID-19 guidelines were followed strictly during interactions and interviews, as this was recently the highest risk factor.

4. Findings

This section entails the findings from the three interviewed companies Tahī, Rua, and Toru. All of the companies are NZ-owned, with physical sites to access. All companies develop physical products that are accessible in the domestic market, and two of the companies export globally. In all three companies, all of the product development processes are carried out within NZ.

The findings are sorted into thematic headings that align with the constructs of the literature model to later help identify similarities and differences. The three companies had, for the majority of the time, similar feedback to questions asked, and any differences have been outlined. Rua and Toru were both SMEs, whereas Tahī was a large enterprise.

All the companies interviewed believed that some NZ firms do currently adopt culture in their products, but there is room for so much more. There is a good cultural representation in the NZ tourist market, but in the domestic market, it is conducted on a very superficial level. No set cultural frameworks currently exist in their companies to include culture in product design. But, they value high diversity and inclusion on a business level, which sometimes translates to indirect cultural inclusion in products from personal backgrounds and lifestyles.

4.1. Investigation

In the investigation through primary research to understand the cultural inclusion process in NZ firms, it was found that companies do not directly have a process for researching cultural trends. The specific issues for each of the case companies are highlighted, as follows.

Tahī, though a large company, was inhibited in developing and manufacturing local culture-based products in small-scale volume due to the small economy of NZ and low demand of products. The company lacked in a process approach for cultural inclusion in their design and development practices.

Toru, as a SME, perceived it was not worth researching cultural trends due to their size, as they would not be able to gain profit returns from this process. Their major deficiency was in their ability to identify the cultural attributes which would be important to consider for translating into a product that could be sold.

Rua, also a SME, perceived that culture was not well understood in NZ, and it was used domestically in the form of products in a very superficial manner. Therefore, the company did not identify specific cultural goals, though they followed a consistent strategy for culture inclusion in their products, which was applied early on in their products life cycle.

All three companies did review holistic trends and product research through what has performed well previously and undertake communication with suppliers, customers, and retailers. In case of Tahī, this was conducted through external companies who specialize in market research analysis. However, the participant from Tahī stated that “NZ are a lot

slower with cultural trends due to its population”, which was raised as an issue regarding whether it is worth making products focused on a small-scale volume when it comes to local culture.

Rua, however, did state that they reflect and identify symbolism initially from looking into NZ’s landscapes, personality, human traits, and cultural identity.

In identifying and extracting cultural attributes that might add value to consumers’ behavior, the response that stood out the most was from Toru: “the ability to distinguish what consumers like versus what they want to spend money on”, indicating that, with cultural attributes, it is important to consider what is appropriate to translate in a product that will be sold. It was found that the company heavily valued listening to every consumer and following current trends in order to positively contribute to consumers’ behavior. Toru aims to improve this within their company by always choosing simple attributes that are easy to understand and have clear relevant meanings. They believe that inclusion of culture creates a unique position for their brand globally, as well as deeper connectivity to NZ and its Maori culture.

4.2. Interaction and Objectives

The ability to identify consumers’ needs in relation to their attitude towards buying the product was strongly found through consumer feedback, mostly with retail partners and social media. Tahi revealed that a not-so-popular method, due to its expense, but still an option they take occasionally, is commissioning consumer research through external agencies. This was usually conducted around a specific topic, such as culture, to ensure that concepts are appealing to the consumer.

All the companies stated that product development goals are set at the beginning of their project, but not from a pure cultural perspective. Tahi does this in the form of developing a NPD brief that outlines milestones and timelines of the project, along with attributes of what the product should include. To determine feasibility, cultural inclusion through naming is usually developed in Rua. They outlined, although they do not have cultural goals, that they do have a clear consistent strategy for how to include cultural names in their products, which they keep consistent and apply early on to the products life cycle.

When asked about communication and practices for open innovation while choosing to adopt cultural inclusion and co-design with cultural representatives to derive meaning for the product, the responses outlined that communication was a very key factor, especially in avoiding appropriation of a certain culture. Internal communication was primarily the first response when choosing to adopt cultural design in the sense of communicating with someone, in-house, that strongly identifies with the chosen culture. Then, this was followed by external communication that was applied slightly differently in each company. At Tahi, when, for example, choosing to adopt Chinese culture, they use cross-border or ecommerce sales channel. Such channels allow for inclusion in the end of a product life cycle when the product is received outside of NZ borders, which works from a global perspective, but not a local one. Another method they practice is contacting influencers in the culture, such as the Diagou network, which is a consumer-to-consumer group that shops on behalf of its cultural product requirements back home. Cultural design feedback is usually communicated to them when they are provided with samples and online questionnaires, being that they are very digitally advanced.

Rua and Toru both generally adopt the Maori culture in their designs. Rua does its communication through speaking to a consultant that is from their local Maori iwi. This consultant usually takes the discussion back to the iwi to ensure appropriateness with more than one leader. At Toru, they generally consult with a third-party individual who labels himself as an expert in advising on cultural appropriation, where companies can contact that person to evaluate the correct use of culture. Therefore, an open innovation culture is broadly practiced in these companies.

4.3. Development and Analysis

In creating a list or matrix to include in the design, two of the participating companies indicated the use of this method, but not primarily for cultural features. Tahi outlined that it consider aspects, such as the markets they are trying to hit, risk perspective, and packaging format, which are mostly outlined in the NPD brief. This assists them in determining things such as their in-house capability. In terms of culture, it helps them outline whom to communicate with if requirements are outside of their capabilities.

Toru develops its lists depending on themes generated by yearly events, such as Matariki and Christmas. Rua implied that they do not form formal lists and matrices and rather achieve this through verbal communication.

Evaluation of the appropriateness of cultural attributes in the design was mostly conducted through consultation with cultural leaders. A method to decrease consultation by Rua, who mostly developed cultural names for their products, was that, initially, a list of names would be developed that are appropriate, and Rua would use only a few. The rest were saved for future designs. This allowed Rua to consult less, only when they needed a new list of appropriate names, saving both parties involved money and time. Toru, however, being the smallest company, outlined that it is much cheaper to launch than to conduct research. Thus, most of their appropriation is conducted through trial and error with consumer feedback. Although this is risky in distorting the company's image, they do not have many options, thus encouraging the idea of having a standardized process for evaluating appropriateness.

4.4. Implementation of Product Design

When the design reaches the stage of implementation, this is achieved by merging all the previous processes. Rua identified that, in their implementation, they first determine the hierarchy of important messages, then they start to implement them. This allows for the features or names with the most important messages to be successfully integrated first. Once integrated, appropriation is again reviewed commonly through internal and external communication, followed by feedback from launch. The feedback is generated mostly through consumers in the following platforms: social media, websites, email, and phone calls. This helps in the iterative process of evaluation for appropriateness, although it is generally checked off at the front end of the design.

4.5. Literature Model Introduction

In the discussion of constructs in the research model from the literature and the possibility of a more NZ-friendly catered model, Tahi indicated their eagerness to adopt such a cultural model, especially if it was possible to add probing questions and reminders to include cultural aspects. They believed that the addition of culture could create a huge excitement in the market when a company is successfully able to tap into what is meaningful for people. This could result in more consumers initially trying their products and initiating them to try again.

Rua believed that a more sophisticated model to include culture is necessary, as currently, the closest they have to a model is a list that specifies font, size, and scale. They believe cultural inclusion adds value by "creating levels of uniqueness, sophistication, understanding and connection as well as portraying something special about NZ". They outlined there is a lot more potential for it to keep adding value in the future.

A slight need for a larger framework was identified by Toru, where they believed the framework was important, but wished to eliminate appropriation by the creation of an official seal of approval. According to them, ideally, there should be official setups by cultural leaders to issue an approval sticker that could be displayed in the product or packaging to demonstrate that the company has performed their part in following procedures to eliminate appropriation. Thus, this involves adopting a more standardized process, which starts by the creation of a standard model. They value cultural inclusion,

as they believe it strengthens their company's image, making them appear more well perceived, caring, and with good intentions.

5. Discussion on Cultural Inclusion in NPD through an Open Innovation Culture

Based on the findings from the three companies interviewed, a new model for cultural inclusion in NZ was developed (Figures 2 and 3), building upon the existing literature model. The revised model incorporates the generic and converging issues identified in all three cases. After analysing the findings using a thematic approach, it was found that, in NZ companies, there was a huge emphasis on open innovation, specifically in communicating with cultural representatives and leaders along with the related activities. This aligns with earlier studies that have highlighted adoption of an open innovation culture in NZ [22]. Thus, the new model (Figure 3) includes an additional phase for communication. This phase includes steps that are preferably followed methodically.

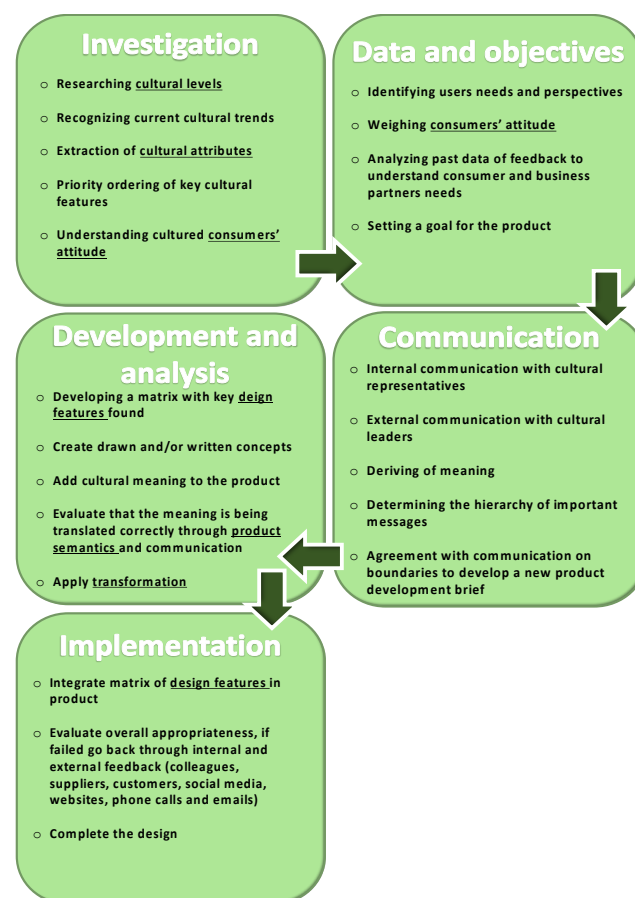


Figure 3. New model for cultural inclusion in New Zealand.

This phase starts with internal communication within the organization to a cultural representative, if available. It was proven in the findings that this is the most common action every company initially took to communicate with a cultural representative. This is followed by external communication with cultural leaders, which forms the second step. Once communication links are formed, the findings indicated that it was then appropriate to derive meaning of culture for the product and to determine the hierarchy of important messages. The phase concludes with communication on boundaries that would assist the companies in developing culture into their currently existing NPD briefs. The addition of the communication phase replaced the requirement for interaction in the second phase, which focused on exploring objectives with data. Companies had expressed their largest source of identifying consumer needs and predicting performance by analysing past feedback and data, if available.

The final significant change in the model is in the implementation phase, where the overall evaluation is expanded and tailored to NZ practices. The evaluation stage includes internal feedback from colleagues and external feedback primarily from cultural representatives and suppliers. Once the product is launched, the appropriateness should still be evaluated from customers through sources, such as social media, websites, phone calls, and emails, as this can weigh heavily on the image of the product and company. The rest of the model aligns with open innovation practices that currently exist but were not documented or found useful to include as something new, which were not considered by the companies. This model is applicable to a common condition of companies serving demand both globally and domestically. The process for cultural inclusion in the product design remains the same under both conditions.

Many crossroads were identified between the literature and the findings. The first was the agreement on lack of cultural product representation in the NZ market. Availability was only at a superficial level [34]. The gap has been identified for more cultural inclusion in products and the lack of frameworks available to ensure a standardized process to generate a positive impact. It was especially beneficial in SMEs, as they did not have enough recourses to research. Thus, a framework would decrease their trial and error, saving the SMEs money and time, while ensuring a safe and positive outcome with each new product developed.

A significant finding from NZ companies that was hard to capture from the literature is the importance of communication in open innovation. It was highlighted that many standard forms were used internally and externally for catering for every process. Starting initially with the development of objectives from past performance feedbacks communicated by consumers and business partners. Many practical platforms were identified, such as the use of social media, influencers, and cross-border channels. This showed variety in being able to receive communication in different methods that was most appropriate to the open innovation culture and their technological advances [23,24]. When choosing to adopt culture, internal communication and agreement were key in establishing the first milestone. This was directly followed by external communication with cultural leaders, as companies were fully aware of their boundaries and capabilities to not appropriate a culture. Thus, it was of high importance to receive guidance from a cultural expert.

In terms of new product development practices, every company developed a NPD brief that included its lists and matrices of requirements, but none included any culturally related standards or features implicitly. This raised a question as to how inclusive NPD processes are towards cultural inclusion in physical product design, identifying a gap to see whether the model developed in this research would complement NPD strategies.

Positive impact from cultural inclusion in the findings did align with the generation of pride for individuals, as companies outlined that cultural inclusion generated excitement in the market from a consumer perspective. This conveys a caring image for the company that boosts the pride of individuals from the business perspective as well. Due to this gap and availability of an opportunity indicated the potential for NZ to generate its own unique market using culture to enhance the country's global capital, as opposed to only being linked to the '100% pure New Zealand' image [28].

A fascinating discovery was the development of the opportunity for culturally designed products to have an official seal of approval. This sparked interest, as the concept is already available with other standards, but not culture. In the literature, it was found that culture is not quantifiable, so a measure would need to be developed. Having a seal of approval would provide an extreme safety net for companies when they come to choose to adopt culture, as they largely fear of appropriating it, so this discourages their efforts towards it. How the framework can be incorporated into such action to check it off at the implementation phase, using a new standard that would exist with the development of the opportunity or converting this framework into a checklist to quantify a measure to ensure companies have incorporated each step, in order to be approved an official seal. Besides the benefits discussed, this action would open new doors of employment in NZ, especially

to cultural representatives, who primarily deserve the largest amount of financial credit for allowing their culture to be used above the positive recognition and representation conveyed in a product.

6. Conclusions

This study investigated how NZ companies include cultural aspects in their product design process. Findings have revealed that NZ companies' open innovation culture heavily outlines the value of internal and external communication and collaboration with cultural representatives. The findings highlight the common innovation practices of capturing consumer needs by analysing previous data on product performances. The research findings had many similarities with the existing literature, but differed in capturing the perspective of practical implementation and expectations. A key insight was the demand to have a model that could open further opportunities, such as official cultural seals of approvals. Therefore, the study findings were applied to make a NZ-friendly cultural inclusive model that adopts important open innovation practices, such as normalizing technological communication in cultural collaboration. A model has been successfully developed as a strategy to allow for the inclusion of culture in new products, with the potential for supply locally and globally. The positive impacts that were identified by the adoption of cultural design in the past and future potential were: creating a unique position for the brand globally, increasing global capital, the generation of excitement through what is meaningful to people, individual pride, well appreciated caring organizations, deeper connectivity and understanding of culture, and consumer purchasing power increase and overall addition of sophisticated uniqueness. This paper establishes culture-based standards for open innovation, with implicit features that can be applied in the physical design of products through the development of a cultural inclusion model, which standardizes the product design processes and complements NPD strategies.

6.1. Implications

The major implication of this study is that it will act as a basis to help contribute to the different facets of cultural inclusion through open innovation. This starts with academia, through the use of a revised framework for future studies. For practitioners in NZ companies, it involves providing insights and a process approach for cultural inclusion in new product development practices. For policy makers, it involves allowing them to use cultural inclusion and the revised process as a strategy for developing an open innovation culture, as well as achieving growth and innovation in their field.

6.2. Limitations and Future Research

This study was limited by six interviews conducted in three manufacturing firms in a New Zealand context, though it presents rich insights on cultural aspects in product design processes captured from the participants. Though the research addresses cultural inclusion in NPD, it does so at a generic level, without considering the readiness for acceptance of specific cultural traits by consumers. Additionally, the link between appropriateness and intellectual property has not been investigated. Therefore, many opportunities for future research have risen from this research. Future research could review the culture-based standards developed in this paper for standardizing the product design processes in the cultural inclusion model for the physical design of products. The model could be practically applied in other organizations to review appropriateness and whether it needs more development through validation. Studies could be conducted in other countries to review appropriateness of the model, and this could be compared to this study. This model could be applied in future studies on inclusion of culture in areas with its own specificities, such as food and culinary products, fashion design, architecture, furniture, art, and music. Linking research to such specific cases would help to develop their applicable methodologies. The readiness for acceptance of specific cultural traits by consumers could also be illustrated in the above cases. Future research could also include the 'design thinking'

methodology, rethinking the process of co-designing with consumers and cultural leaders or representatives as part of the open innovation process. The link between appropriateness in the inclusion of culture and intellectual property could also be studied in the future.

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