

## **Can Customers' be classified using Facial Expressions?**

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### **Abstract**

The ability to classify customers using facial expressions can prove highly beneficial to salespeople. This study aims to examine the practicality of a customer categorisation scheme, which involves classifying customers based on facial expressions. The results show that a classification into four groups namely, Browsers, Future buyers, Potential buyers, and Buyers is possible. A high percentage (86.7%) of respondents expressed agreement on the use of facial expressions to classify customers. In the experiments 125, out of 150, facial expression photos were classified by salespeople. One benefit of this customer categorization is the ability of salespeople to employ an appropriate selling strategy resulting in improved store sales. The categorization scheme combined with automatic facial expression recognition can be used for training and automatic classification.

**Keywords:** Facial expressions, customer types.

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## Introduction

Shergill et al. (2008) proposed that computers can be used to measure consumer interest. They believe that knowing customer types can help salespeople to improve their ability to allocate their time and produce the best results, both for the customer and for the business. In the retail market, the salesperson plays an important role. Due to increasing sales costs, a number of communication approaches have been suggested to reduce these costs, including telemarketing, direct mail, and demonstration centres (Shapiro and Wyman, 1981). Sujan et al. (1988) held, however, that a salesperson's personal contact with a customer is the most effective method of making a sale. As a result, the best way of reducing selling costs is to increase a salesperson's productivity by assisting salespeople to work smarter. Based on Sujan et al. (1988), working smart requires knowledge on the categorising of customers and the needs of customers.

Facial expressions has been proposed to classify customers into four groups; browsers, future buyers, potential buyers, and buyers (Shergill, et al., 2008). Customers can be satisfied through different selling strategies. Although categorising customers into groups by facial expressions can improve salespeople's selling skills, meet customers' needs, increase sales and profits, and be useful for making and checking market segmentation and positioning strategies (Sharma and Levy, 1995; Shergill, et al., 2008), there is no literature on the empirical examination of the relation between customer types and facial expressions. Most studies on customer categories use traditional demographic variables, such as age, income, education, occupation, family structure, ethnic background, gender, and geographic location. For facial expressions, most research focuses on customers' emotions and psychology. For example, facial movements that are read as expressing emotion originally served direct adaptive functions in specific emotion-related situations (Parkinson, 2005). Thus, it is important to determine whether: customers can be categorised by facial expressions; the four proposed customer categories classified by facial expressions are acceptable; and what the facial expressions are for each customer category. These questions are essential to the development of the new customer categorisation scheme.

## Literature Review

**Facial Expressions in Marketing:** The application of facial expressions is not widespread in marketing. Only one study has been carried out relating facial expression and customer type (Shergill et al., 2008). However, there are studies on the application of facial expressions in other aspects of marketing. Howard and Gengler's (2001) study focused on the emotional contagion effects of product attitudes. They found that customers (receivers) receiving favourable facial expressions from salespeople (senders) have a positive bias on products. Sirakaya and Sonmez (2000) used facial expression to study the gender images in Government tourism brochures. Derbaix (1995) used facial expressions to test people's attitudes towards advertisements and brands. Others, such as Yuasa et al. (2001), applied facial expressions to the process of negotiation to help achieve an agreement between buyers and sellers. They argued that the participant's decision was affected by emotional factors, such as emotional disturbances and the impression of opponent's attitude. They also found that an agreement is

likely to be achieved when players in the negotiation choose a happy face. Facial expressions have also been applied in e-commerce. Lee (2002) developed computer software to implement an e-shopping authentication scheme that used facial recognition, instead of user names and passwords, to control access to the website in a modern consumer e-shopping environment.

**Facial Expressions and Customer Behaviour:** Although no literature directly relates facial expressions and customer behaviours to each other, to a certain extent, such a relationship exists. Carroll and Young (2005) claimed that faces are tools for communicating social motives to specific addressees, not a surface on which private affective meanings are somehow made visible. This implies that facial expressions of customers implicate some information, or intent, for salespeople. A smiling face may indicate satisfaction and an angry face may mean dissatisfaction with the product/service. According to Dewey (1894), facial movements make a direct contribution to practical actions during emotional episodes. This means that facial expressions can correctly indicate the feelings or thoughts of customers. Some facial expressions contain certain meanings. For example, smiling can be representative of acceptability, and anger is considered to be intimidating behaviour, while fear and crying are regarded as help-seeking behaviour (Fox, et al., 2000). Fridlund (1991) argued that the function of facial movements is to communicate information to others, rather than simply to express something. Facial displays are, thus, intrinsically other-oriented messages, rather than individual reactions. Second, he believed that the content of the communication is not directly about emotion, but rather concerns “behavioural intentions” or more generally “social motives” (Fridlund, 1991). The central idea is that giving out signals concerning internal states would allow salespeople to make appropriate adjustments to customers’ facial actions.

**Facial Expressions and Customer Intentions:** Facial expressions signal what the expresser intends to do and what the expresser wants others to do (Fridlund, 1992, 1994). Six basic emotional facial expressions were identified by Ekman (1992). These are; anger, surprise, disgust, sadness, happiness, and fear. These basic emotional facial expressions are related to the internal state of customers. Masip et al. (2006) found that satisfaction has a direct and positive impact on the purchase decision of customers. If we only consider factors of a product/service itself as affecting customers’ satisfaction, regardless of other factors such as weather or bad events in the customers’ experience, facial expressions can be used to measure their satisfaction. There are some facial characteristics of angry faces; pursed lips, baring of the teeth, staring or squinting the eyes, and downward or frowning eyebrows (Maratos et al., 2008). Happy facial characteristics can be easily recognised, such as in the turning up of the corners of the mouth. Facial expressions of sadness convey messages related to loss, bereavement, discomfort, pain, helplessness, and more (Hess and Thibault, 2009). Sad faces signal requests for assistance and comfort. Facial expressions of sadness are easy to recognise, such as the corners of the mouth being downward. Fearful facial expressions convey information about imminent danger, a nearby threat, a disposition to flee, or the likelihood of bodily harm (Hess and Thibault, 2009). Fearful facial expressions are hard to detect in customer behaviour. Anxiety is, however, included in fear. We can recognise some anxious facial expressions when customers are struggling as to whether the product is worth buying, or which is better. Facial expressions of disgust are often part of the body's responses to objects that are revolting and nauseating, such

as rotting flesh, faecal matter, and insects in food, or other offensive materials that are rejected as suitable to eat. Disgusted facial expressions are often displayed as a commentary on many other events and people that generate adverse reactions (Ekman and Friesen, 1975). Thus, customers with disgusted facial expressions are unlikely to receive information. Surprised facial expressions can arise as a result of experiencing an unexpected relevant event.

**Customer Categories and Facial Expressions:** A new concept of customer classifications has been developed using facial expressions to classify four customer types by using computerised technology (Shergill, et al., 2008). The authors proposed that customer categories can be classified by facial expressions into four categories: *browsers*, *future buyers*, *potential buyers*, and *buyers*. *Browsers* enjoy killing their own, and sales personnel's, time. *Future buyers* collect product/service information for a future purchase. *Potential buyers* have a desire to buy, but no final deal is made, because the salesperson may not handle the buyer in an appropriate manner. *Buyers* are specifically wanted to purchase a product immediately. *Browsers* are normally killing time when they are shopping. They quickly look at a variety of different products, or categories, with little attention. They enjoy their time looking at attractive things, such as music, perfumes, and decorations. They may communicate with salespeople, but purchases will seldom be made. Browser may make an impulse buy depending on the nature of the stimuli encountered (Moe, 2003). Browsers display four facial expressions; anger, sadness, fear, and disgust. *Future buyers* normally acquire general product knowledge. They spend more time than browsers looking at products and searching for information. They may initially talk to a salesperson in order to get some information. Moe (2003) labelled these people information searchers for future purchases. Neutral expressions characterise this category as customers with neutral facial expressions may be thinking, or concentrating, on product information, or something else within their psychological logic (Kang et al., 2008). *Potential buyers* have a desire to buy a product, but can be influenced by external factors e.g. if the salespeople do not provide the required product information, or ignore them by accident, they might abandon the purchase decision. Potential customers desire interaction with salespersons to confirm product information they already have (Moe, 2003). These characteristics indicate that potential customers need a little push to complete the purchase. Facial expressions of surprise are classified into this category because customers with surprised facial expressions are indicative of product interest which surprises them. *Buyers* are goal-directed and have a purchase planned. They normally look at a limited number of products and often view these repeatedly. Their purpose is to buy, so standing and looking at a certain product is common. They may repeat reading the product information to confirm the knowledge they already have (Moe, 2003). A buyer is willing to make direct eye contact and appears open and enthusiastic. Customers with facial expressions of happiness should hence be treated as buyers.

### Research Objectives

1. Whether customers can be classified into 4 categories.
2. Whether facial expressions can be used to put customers into these four customer categories.
3. To identify what types of facial expressions match with each customer category.

## Research Methodology

The subjects of the research are randomly selected 98 respondents from a total of 402 salespeople from 42 electronic stores in Auckland as these stores are the most representative electronic stores in Auckland. Face to face interview method with a structured questionnaire was used to collect the data. A set of 150 photos with different facial expressions are used to test how salespeople classified the photos into customer categories. The photos include six basic emotional facial expressions, neutral, and thinking faces. The photos used in the study are taken from a photo database developed by computer science research students. The questionnaire was constructed based on previous literature. The main contribution was drawn from Shergill et al. (2008), which suggested first testing whether customers can be classified by facial expression, followed by testing the four customer categories in the new customer categorisation scheme. Respondents are experienced sales people who are considered to be experts in the sales field. Given the objectives of research to classify customers, frequencies and percentages seemed appropriate to examine the data. The majority rule is used as a basis for the categorisation decision.

## Analysis and Results

**Sample Profile:** There are 75.5% male and 24.5% female respondents, while majority of them (50%) are between 21 and 30 years old, 53.1% are Asian while 21.4% are New Zealand European, 43.9% hold bachelor degree and 27.6% hold trade qualifications (27.6%), 46.9% have 1-2 years work experience while 30.6% of the respondents have 2-4 years experience.

**Whether Customers Can Be Classified by Facial Expressions:** The first research objective is to test whether customers can be classified by facial expressions. The research results show that a very high percentage (86.7%) of respondents expressed agreement on the use of facial expressions to classify customers into groups. This means that most respondents accepted that facial expressions can be used to recognise customer types.

**Classification of the Four Customer Categories:** The second objective is to empirically test if the respondents agree to the proposed 4 customer category typology. Over 80% agreed that customers can be classified into proposed categories. Further around 60% respondents strongly agreed with the category *browsers* which mean that respondents believe that *browsers* are not interested in buying, but enjoy wandering through the store and killing time and the time of salespeople. Fifty two percent respondents strongly agreed with the category *future buyers*. This means that these respondents believe that *future buyers* are collecting information for future purchasing. Around 57% strongly agreed with the category *potential buyers* meaning that these respondents think that *potential buyers* have the desire to buy but need assistance to make decisions for a current/future purchase. Further 48% respondents strongly agreed with the category *buyers* as respondents believe that buyers purchase products without assistance.

**Facial Expressions and Customer Categories:** The third research objective is that of empirically examining which facial expressions each customer category is related to. In order to

determine the answer to this objective, 150 facial expression photos were used. These comprise of 6 basic emotional facial expressions and neutral faces. *Browsers* display facial expressions of anger, sadness, fear, or disgust, *future buyers* have neutral facial expressions, *potential buyers* have surprised expressions, and *buyers* have happy facial expressions.

The data are analysed using frequency distribution. We can see that each facial expression picture has a percentage of respondents choosing each customer category. For example, 59.2% of respondents think that picture 1 belongs to the *browser* category, 26.5%, 12.2%, and 2.0% respondents think that picture 1 belongs to the *future buyer*, *potential buyer*, and *buyer* category respectively. This means that more than half of the respondents think that picture 1 should be categorised as a *browser* customer.

In order to categorize the pictures and to see which facial expressions are included in each customer category, a rule of majority responses method is used to classify the pictures into each customer category. For example if more than 50% respondents classify a specific picture into *browser* category then that picture was allocated into *browser* category. Based on this method, 40 pictures are classified into the *browser* category, 34 pictures are into *future buyers*, 25 pictures into *potential buyers*, and 26 pictures are into *buyers*. The remaining 25 pictures could not be classified into any exclusive categories.

### **Conclusions and Implications**

The research results provide the evidence that facial expressions can be used to classify customers into categories. It also provides evidence that the four customer categories are suitable for use in the customer categorisation scheme. The study also indicated that each customer category exhibits different facial expressions. The study offers opportunities for sales training programmes by training salespeople how to read customers' facial expressions and using proper selling strategies. As the shopping behaviours of the four different types of customer are different, it is important to apply an appropriate sales strategy to each category. Salespeople should leave browsers unattended, because they are not interested in buying or seeking information of products/services, but are simply browsing.

### **Limitations and Future Research**

This study utilised Auckland sample which may not represent national population, hence any future study should use the national sample. Another limitation is the use of only electronic stores which may not represent other goods; any future study should use a wide variety of goods in order to generalise the results to other goods/stores. Another limitations is the small sample size, any future studies should use large sample in order to generalise the results. Also, the next stage of this project is to develop the software to map these different faces and then do an in store trials for its implementation.

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