

Brand representation and symbolism understanding – perceived differences among young consumers

Ezeni Brzovska

Faculty of economics - Skopje

Stojan Debarliev

Faculty of economics - Skopje, Ss. Cyril and Methodius University in Skopje

Durdana Ozretic-Dosen

University of Zagreb, Faculty of Economics & Business, Marketing Department

Cite as:

Brzovska Ezeni, Debarliev Stojan, Ozretic-Dosen Durdana (2020), Brand representation and symbolism understanding – perceived differences among young consumers . *Proceedings of the European Marketing Academy*, 11th, (85067)

Paper presented at the 11th Regional EMAC Regional Conference, Zagreb (online), September 16-19,2020



Brand representation and symbolism understanding – perceived differences among young consumers

Abstract:

The purpose of the paper is to understand whether children of different ethnicity, age and gender relate to brand logos in different ways in term of brand representation and brand symbolism. Children begin to understand symbolic aspects of consumption at early age, enhancing the importance to observe and explain certain pattern of behavior in very young children. The paper extends existing research by including more diverse sample of children with different ethnic background and the research was administered across three testing sessions, assessing level of brand representation and symbolism in children aged 3 to 5 years. The findings indicated that brand representation and understanding brand symbolism commences at an early age. Differences in the perceptions among children with different demographic characteristic were identified, with potential implication on the effects of branding.

Keywords: brand symbolism, young children, brand representation

1. Introduction

Understanding children's consumer behavior is an important part that has an influence on consumption choices. Evolutionary patterns of the cognitive processes among young children demonstrate their capacities to recognize brands as a prerequisite in forming impressions of other people based on possessed brands. Currently, there is evidence that children have ability to recognize brand at early age as integral part of their life in preoperational stage (Aktas Arnas, 2016; Valkenburg and Buijzen, 2005; Bruce & Hill, 1998; Mizerski, 1995).

According to most eminent theories regarding cognitive development in children, Piaget's theory, children from about two to seven years old are not able to think how people differ and do not demonstrate skill for more complex and abstract judgments (Piaget, 1970). Consequently, young children at the preoperational stage rely on observable aspects of their environment, such as concrete perceptual features, whereas abstract thinking will be more dominant for the older children in the concrete operational stage. Younger children primarily are more familiar to brands on a perceptual level, serving as a cue for products. The importance of brands has been increased at the moment when children employ more complex cognitive abilities to evaluate not just particular physical attributes, but moreover imaginary brand characteristics. Contrary to Piagetian theory, other papers demonstrate the capabilities of young children to understand brand symbolism. Bachmann and Roedder (2003) found that young children are able to associate certain images or personality characteristics of consumers owning a particular brand. Young children three to five years old understand brand symbolism and attach certain brands to user relate imagery such as popularity and happiness (McAlister and Cornwell, 2010).

So far, most studies conducted on brand recognition and brand symbolism have been focused on children from one ethnicity group. Several papers demonstrate the need of extending the children brands research by implementing more diverse sample with children from different ethnicity groups (Kellershohn, Walley, & Vriesekoop, 2018; Hemar-Nicolas, Gollety, Damay, & Ezan, 2015; McAlister & Cornwell, 2010; Nairn, Griffin, & Wicks, 2008; Bruce & Hill, 1998). The Piagetian model has the main focus on the chronological age of children and therefore excludes other non-age-related factors such as gender, ethnicity and social class which are likely to have an impact on children brand symbolism (Nairn, Griffin, & Wicks, 2008). Bruce and Hill, (1998) emphasize the need for a future empirical study to engage larger and more diverse samples of children in order to detect similarities and differences. Hemar-Nicolas, Gollety, Damay, and Ezan, (2015) suggest to expand their study with children from different cultural backgrounds.

The present study is designed to redress this limitation by including children with different ethnic background. The children investigated in this study were within the stage of development (ages 3-5) defined by Piaget as preoperational in order to determine if young children from two ethnicity groups are able to recognize the social implications of consumption choices. In this context, our research purpose is to provide a valuable contribution to this topic issue by extending the sample with children from different ethnicity groups.

Younger children demonstrate little evidence of understanding brand symbolic aspects of consumption. Our findings will contribute to this stream of research by examining the age at which children hold mental representation abilities and understand brands' symbolism and the potential existence of differences among ethnicities. It was hypothesized that children's ability for brand representation and understanding of brands as symbols will differ among children with different nationalities, age and gender. In this study, abilities to recognize the symbolic meanings of brands were examined among children with different demographic characteristics.

2. Literature Review - Understanding of Children Brand Recognition and Brand Symbolism

Child's cognitive development determines the ability of children to recognize, group and to form opinions about others based on their choices of preferred consumption brands. Young children are immersed in brandscape and exhibit great knowledge of certain brands, but the cognitive developmental stages of young consumers restrict their ability to develop more abstract relationships in their environments. The most insightful investigations on children's understanding of brands have been conducted by Piagetian psychological theory of cognitive development, (Piaget, 1970; 1960). Piaget's cognitive developmental stage theory support the expectation that children ability for consumption symbolism is increasing as they grow older.

Most children aged 3-5-years are not able to read, but still, they can recognize certain logos. The recognition of brand logos can serve as a perceptual cue that identifies a product and might influence on developing loyalty to certain products, too. Significant differences are evident in the cognitive abilities and resources available to children at these stages, and characteristics of each stage are essential for brands' persuasive intent to position certain products. Past research, consistent with the traditional theory of cognitive development, suggests that sophisticated symbolism understanding is absent until somewhere between 7 and 11 years (John, 1999).

Several surveys based on a qualitative methodology observed specific children's behavior related to brand recognition. The preschoolers have greater knowledge about the product categories compared to their skills to designate the actual names associated with the brand logos (Bruce and Hill, 1998). Fischer, Schwartz, Richards, Goldstein, and Rojas (1991) demonstrated that children had high recognition of the children's brand logos ranging from 91.7% for the Disney logo. They found that recognition level has been increased by age for each product categories. Valkenburg and Buijzen (2005) observed the ability of the brand recognition level among children with different demographic characteristics. According to the authors, the highest level of brand recognition occurred between 3 and 5 years old. The results did not demonstrate gender differences among children on the level of the individual brand logos. Contrary, boys and girls can clearly identify their predisposition and preferred brand choices of toy in different forms or categories (O'Cass and Clarke, 2002). Mizerski (1995) examined children three to six years of age and found increased ability for brand recognition through more developed cognitive and information processing abilities. Preschool children's recognition of symbols was best predicted by age and related to the frequency of media exposure (Derscheid, Kwon, & Fang, 1996).

Brand symbolism is defined as an understanding of the ways brand name symbolize user relate qualities. Consumers develop and communicate their identity to product related association and user related imagery such as popularity or happiness (Keller, 2016). Therefore, many brands are purchased for the desired image they convey rather than for the possessed functional attributes of products. Children at young age are aware that ownership of certain brands evokes an image of popularity, happiness...and understanding consumption symbolism, is an important aspect of children's socialization into the consumer world (Nairn, A., Griffin, C., & Wicks, P. G. 2008). Bachmann and Roedder (2003) express concern over the correlation between the brand consciousness of young children and its impact on the development of materialistic values in children. The authors support the organized initiatives that reduce the visibility of brands, and familiarity with brands especially among young children.

There is little research on the topic whether young children become mindful for symbolic meaning attached to certain products and brands. John's (1999) findings are consistent with Piagetian theory that children younger than seven years hold immature cognitive capacity, which

restricts any understanding of the intentions of others who might use brands for expressing individual purposes. Haynes, Burts, Dukes and Cloud (1993) suggest that children aged three to six had not possessed the perceptual skills needed for brand discrimination. Still limited researches have provided evidence that two to three-year old children construct narratives of identity around brands and perceive the importance of brand symbolism in their everyday social interactions. Findings expose that brand symbolism understanding starts as early as two years, and increases with age throughout the pre-school years. Children are more likely to prefer branded products if they are exposed to more television and have a less critical parental communication style (Watkins, Aitken, Thyne, Robertson, & Borzekowski, 2017). Initial studies concerning developmental recognition of children consumption symbolism among other age groups likewise include preschool children group. The results reveal the minimal level of the ability to recognize the social implications of consumption choices among preschoolers, their judgments about the owners of various houses and automobiles were essentially random. The questions were asked in personal interviews and the stimuli were presented as photographs, using only adult products. The gender differences regarding consumption symbolism were influenced by product class (Belk, Bahn, and Mayer, 1982). Consequently, the younger children would hold weaker consumption-based stereotypes compared to older children, but still, the owners of the brand products are perceived as more favorable than private brand owners. (Belk, Mayer, and Driscoll, 1984).

One of the first studies for understanding children brand symbolism found children as young as three had an emerging knowledge of brands that were relevant in their lives (McAlister and Cornwell, 2010). Theory of mind was employed to demonstrate significant association with preschoolers' understanding of brand symbolism. The results found that young children capable to think about mental state of others and to hold mental perspective skills, will better understand the use of brands for intentional self-expression. Young children with developed executive functioning manifest greater ability to process information about object and ability to form mental representation of brands. McAlister and Cornwell (2010) found that three years old children have the ability to think about brands in a symbolical manner. These researches are confronting Piagetian literature, which claimed that young children were cognitively unable to think about brands symbolically. How young children form brand associations and develop an understanding of brand symbolism has implications for their lifelong relationships to brands and material possession (Watkins, Aitken, Robertson, Thyne, & Williams, 2016).

Consequently, the research agenda of this study is assessing the understanding and potential differences of brand recognition, brand representation, and brand symbolism among children from different ethnicity, age and gender groups.

3. Methodology and Results - Brand Recognition, Brand Representation and Brand Symbolism Studies

We investigate whether children of different ages, gender, and ethnicity relate to brand logos and names in different ways in term of brand representation and brand symbolism. The participant sample comprised of 54 children. Data were collected from 29 preschool girls and 25 preschool boys from two different child-care center programs located in Skopje. The age distribution was 14 three-year-old, 21 four-year-old, and 18 five-year-old. Twenty respondents were Albanian, and 34 Macedonian children.

The present research is designed to measure brand recognition and representation among children aged 3 to 5 years following McAlister and Cornwell's (2010) classification, and the dependent variables for brand symbolism were developed according to Watkins et al. (2017)

measures. The initial empirical study was assessing levels of brand recognition in children aged 3 to 5 years from a wider variety of product categories. The stimulus brands were chosen based on the previous results elicited from the survey distributed among parents. Namely, parents should indicate the TV channels and brands that their children have been exposed to. The stimuli were 51 brands representing 7 product categories on the same size card (7X7sm.). In individual sessions to avoid over-stimulation, fifty-one logos were separately tested, and a child was asked what each brand logo cards stand for (scored as one, and if the child did not have any knowledge for the defined brand it was scored as zero).

Table 1 displays the children’s average brand recognition rates. Within the children brands, average brand recognition is 54,87%, ranged from 26.32% to 89.47% individual recognition rate. Across product categories within children brands, average brand recognition ranged from 57.14% for food, to 57.41% for cartoons, to 61.48% for toys. The highest percentage for brand recognition among adult brands was evident for food and drink, 46.66%. Foreign brands have 46,18% average recognition rate, ranged from 14.71% to 70.59% individual recognition rate and it is higher than domestic brands with 26.80 average brand recognition rate, ranged from 0% to 64.71% individual recognition rate. Comparing children brands and adult brands, recognition rate is higher for children’s brands (n=54, M=54.87, SD=17.69), than for brands 12+ (n=54, M=35.91, SD=22.13), a statistically significant difference of $t(106)=4.918$, $p=0.0005$. Comparing foreign and domestic brands, recognition is higher for foreign brands (n=54, M=46.18, SD=14.32), than for domestic brands (n=54, M=26.80, SD=18.242), a statistically significant difference of $t(100.122)=6.122$, $p=0.0005$.

Brand recognition	N	Mean	Std. Deviation	Minimum	Maximum
Children brands	54	54,87	17.696	26.32	89.47
Toys	54	61.48	27.97	0	100
Cartoons and TV channels	54	57.41	34.97	0	100
Food and drinks	54	57.14	20.01	14.29	100
Adult brands	54	35.91	22.134	5.56	83.33
Cars	54	22.68	20.181	0	75.00
Food and drinks	54	46.66	20.558	10.00	90.00
Mobile phones	54	40.74	42.419	0	100.00
Sport brands	54	37.96	41.133	0	100.00
Foreign brands	54	46.18	14.325	14.71	70.59
Domestic brands	54	26.80	18.342	0	64.71

Table 1. Percentage of brand recognition across brand and product categories

To test brand representation, eight brand logos with the highest scores were selected from brand recognition study. Each brand has its own compatible pair, and for each brand, there were five association picture cards. The child was presented with 15 associative picture cards (5 pictures were intentionally presenting

The purpose of the brand symbolism analysis was to observe the ability of children to think about the brand name at an abstract level, connecting the brand name to associations such as happiness, quality, popularity, and purchase intention. For the brand symbolism task, five pairs of equivalent branded and non-branded product pairs were employed. Each pair consisted of the original branded product and a general brandless product and children were asked to indicate the product they would prefer in terms of happiness, quality, popularity, and purchase intention. The emoticons were used for assessing the happy character of the brands, the three other items were

measured by asking questions to children and each question was scored 1 or 0 depending on whether the child chose the branded version.

3.1 Analysis of children brand representation and brand symbolism

This study was conducted to further the understanding of brand representation and brand symbolism among young children with different age, gender and ethnic background.

Table 2 represent the results from descriptive statistics demonstrating different levels for brand representation and brand symbolism abilities, among children with different gender, ethnicity and age, confirming hypothesized statement.

Demographic characteristics		Brand outputs	N	Mean	Std. Deviation	Minimum	Maximum
Gender	Male	Representation	24	64.04	5.94	52	74
	Female		29	64.31	6.87	51	75
	Male	Symbolism	24	11.25	0.94	9	13
	Female		26	12.96	2.54	9	17
Ethnicity	Macedonian	Representation	33	61.79	5.89	51	74
	Albanian		20	68.15	5.21	60	75
	Macedonian	Symbolism	33	12.33	2.34	9	17
	Albanian		17	11.76	1.56	9	15
Age	3 years	Representation	13	58.21	4.67	51	64
	4 years		21	62.76	4.01	57	73
	5 years		16	70.50	3.97	64	75
	3 years	Symbolism	14	11.38	0.96	9	13
	4 years		21	13.19	2.71	9	17
	5 years		18	11.38	1.15	9	13

Table 2. Brand representation and brand symbolism analysis - gender, ethnicity and age groups

An independent-samples t-test was run to determine whether differences exist in the level of brand representation between male and female children. The level of brand representation was higher at female children (64.31 ± 6.87) than male children (64.04 ± 5.94), but the differences between these two groups were not statistically significant, $t(51) = -0.251$, $p = 0.881$ (Table 3).

A Welch t-test was run to determine if there were differences in the level of brand symbolism between male and female children due to the assumption of homogeneity of variances being violated, as assessed by Levene's test for equality of variances ($p = .001$). The level of brand symbolism was higher at female children (12.96 ± 2.54) than male children (11.25 ± 0.94), a statistically significant difference of $t(32.272) = -3.207$, $p = 0.003$ (see Table 3).

Independent variables (Demographic characteristics)	Depended variables (Brand outputs)	t	df	Sig. (2-tailed)	Std. Error Difference
Gender	Representation	(0.151)	51.000	0.881	1.784
	Symbolism (Welch t-test)	(3.207)	32.272	0.003	0.533
Ethnicity	Representation	(3.971)	51.000	0.000	1.602
	Symbolism	0.901	48.000	0.372	0.631

Table 3. Independent t-test on the brand representation and brand symbolism study - gender

An independent-samples t-test was run to determine if there were differences in the level of brand representation between Macedonian and Albanian children. The level of brand representation was higher at Albanian children (68.15 ± 5.21) than Macedonian children (61.79 ± 5.89), a statistically significant difference of $t(51) = -3.971, p = 0.0005$ (see Table 3).

An independent-samples t-test was run to determine if there were differences in the level of brand symbolism between Macedonian and Albanian children. The level of Brand symbolism was higher at Macedonian children (12.33 ± 2.34) than Albanian children (11.76 ± 1.56), but the differences between these two groups were not statistically significant, $t(48) = 0.901, p = 0.372$ (Table 3). A one-way ANOVA was conducted to determine if the level of brand representation was different for the children at a different age. Children were classified into three groups: 3 years old ($n = 14$), 4 years old ($n = 21$), and 5 years old ($n = 18$). The level of brand representation was statistically significant between different age groups, $F(2) = 35.998, p < .0005$. The level of brand representation increased from 3 years old children (58.21 ± 6.67), to 4 years old children (62.76 ± 4.01), to 5 years old children (70.50 ± 3.97), in that order. Tukey post hoc analysis revealed that the increase from 3 years to 4 years old (4.547) was statistically significant ($p = .008$), also, from 3 years to 5 years old (12.285) was statistically significant ($p = .0005$), as well as the increase from 4 years to 5 years old (7.738) was statistically significant ($p = .0005$).

Independent variables (Demographic characteristics)	Depended variables (Brand outputs)	df	F	Sig.
Age	Representation	2	35.998	0.000
	Symbolism (Welch t-test)	2	4.128	0.026

Table 4. One-way ANOVA on the brand representation and brand symbolism study - age

Similarly, a one-way Welch ANOVA was conducted to determine if the level of brand symbolism was different for children at different age (as the Homogeneity of variances was violated, assessed by Levene's Test of Homogeneity of Variance, $p = 0.0005$). The level of brand representation was statistically significantly different between different age groups, Welch's $F(2) = 4.128, p < 0.026$.

Dependent Variables (Brand outputs)	Independent variable (age groups)		Mean Difference (I-J)	Sig.
	(I) Age	(J) Age		
Representation	3 years	4 years	(4.547)*	.008
		5 years	(12.285)*	.000
	4 years	3 years	4.547*	.008
		5 years	(7.738)*	.000
	5 years	3 years	12.285*	.000
		4 years	7.738*	.000
Symbolism	3 years	4 years	(1.805)*	.026
		5 years	0.009	1.000
	4 years	3 years	1.805*	.026
		5 years	1.815*	.026
	5 years	3 years	(0.009)	1.000
		4 years	(1.815)*	.026

Table 5. Post Hoc Tests on the brand representation and brand symbolism study – age

The level of brand symbolism increased from 3 years old children (11.38 ± 0.96) to 4 years old children (13.19 ± 2.71), and decreased to 5 years old children (11.38 ± 1.15), in that order. In this case, a group of 4 years old children has the highest level of brand symbolism. Games-Howell post hoc analysis revealed that the increase from 3 years to 4 years old 1.805 was statistically significant ($p = .026$), as well as the decreased from 4 years to 5 years old -1.815 was statistically significant ($p = .0026$), but no other group differences were statistically significant.

4. Discussion

The purpose of this research was to determine whether understanding of brand representation and symbolism differ among children with different demographic characteristics. The study provides new insight into young children's brand symbolism understanding by carefully selecting ethnically diverse sample. Consistent with McAlister and Cornwell's (2010) findings, the analysis confirms that young children are more successful at recognizing children's brands compared to adult brands. When analyzed by product type, toys demonstrated the highest rate of brand recognition among children aged three to five years old. Young children were found to be more likely to recognize a foreign brand compared to a domestic one. Children brand recognition at an early age may have implications on children's long-term consumption preferences and values. Understanding the effects of brand symbols among young children will contribute to a more informed approach among marketing managers to create marketing activities for a specific target group. The way young children perceive brand names will have an impact on their future consumer judgment and potential development of a materialistic orientation.

Findings reveal the existence of different levels of mental brand representation ability and brand symbolism understanding among young children with different demographic characteristics. Female children demonstrated a greater understanding of brands as symbols and are more aware of products conveying social status features, but there was no evidence for statistically significant differences for symbolic meanings of brands among children with different ethnic backgrounds.

Findings indicated that children's ability for the mental representation of brands and recognition of brand symbolism is emerging with age, which is consistent with previous studies (Derscheid et al., 1996; Fischer et al., 1991). The level of understanding of symbolic brand associations has the most significant development between the ages of three and four years. The results extend the findings of previous papers by analyzing children with different ethnic backgrounds and assess levels of brand recognition and brand symbolism among children with different ethnicity, age, and gender. Young children perceive brands as a source of self-identity and social recognition, which may indicate preferences for purchasing and consuming certain products over others. Therefore, holding a better understanding of the way different children understand brands will improve implementing better brand strategies consistent with children's brand preferences.

5. Limitations and Future Research

A limitation of the study was the small number of interviewed children from only one city. Therefore, it was not a representative geographical sampling. Future research in this area should implement much larger sample of children adding socioeconomic status as a variable of interest, a more diverse sample of family categories and extend existing research by assessing the environmental factors in young children understanding of brand symbolism.

References

1. Aktaş Arnas, Y., Taş, I., & Gürğah Oğul, İ. (2016). The development of brand awareness in young children: how do young children recognize brands?, *International Journal of Consumer Studies*, 40(5), 536-542.
2. Bachmann, A. G., & Roedder John, J. R. (2003). The meaning of brand names to children: A developmental investigation, *Journal of consumer psychology*, 13(3), 205-219.
3. Belk, R., Mayer, R., & Driscoll, A. (1984). Children's recognition of consumption symbolism in children's products. *Journal of consumer research*, 10(4), 386-397.
4. Belk, R.W., Bahn, R.N. and Mayer, R.N. (1982), Developmental recognition of consumption symbolism. *Journal of Consumer Research*, 7, 4-17.
5. Bruce, M. K. H. M., & Hill, A. J. (1998). Fashion brand preferences among young consumers. *International Journal of Retail & Distribution Management*.
6. Derscheid, L. E., Kwon, Y. H., & Fang, S. R. (1996). Preschoolers' socialization as consumers of clothing and recognition of symbolism. *Perceptual and Motor skills*, 82, 1171-1181.
7. Fischer, P.M., Schwartz, M.P., Richards, J.W., Goldstein, A.O. and Rojas, T.H. (1991). Brand logo recognition by children aged 3 to 6 years: Mickey Mouse and old Joe the Camel'. *Journal of the American Marketing Association*, 266, 3145-8.
8. Haynes, J. L., Burts, D. C., Dukes, A., & Cloud, R. (1993). Consumer socialization of preschoolers and kindergartners as related to clothing consumption. *Psychology & Marketing*, 10(2), 151-166.
9. Hemar-Nicolas, V., Gollety, M., Damay, C., & Ezan, P. (2015). "What brand do you eat?" The influence of food brands within children's peer groups. *Young Consumers*.
10. John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of consumer research*, 26(3), 183-213.
11. Keller, K. L. (2016). Reflections on customer-based brand equity: perspectives, progress, and priorities. *AMS review*, 6(1-2), 1-16.
12. Kellershohn, J., Walley, K., & Vriesekoop, F. (2018). Young children's perceptions of branded healthy fast food. *British Food Journal*.
13. McAlister, A. R., & Cornwell, T. B. (2010). Children's brand symbolism understanding: Links to theory of mind and executive functioning. *Psychology & Marketing*, 27(3), 203-228.
14. Mizerski, R. (1995). The relationship between cartoon trade character recognition and attitude toward product category in young children. *Journal of Marketing*, 59(4), 58-70.
15. Nairn, A., Griffin, C., & Wicks, P. G. (2008). Children's use of brand symbolism. *European journal of marketing*, 42(5/6), 627.
16. O'Cass, A., & Clarke, P. (2002). Dear Santa, do you have my brand? A study of the brand requests, awareness and request styles at Christmas time. *Journal of Consumer Behaviour: An International Research Review*, 2(1), 37-53.
17. Piaget, J. (1960). *The general problems of the psychobiological development of the child*, in Tanner, J.M. and Elders, B. (Eds), *Discussions on Child Development: Proceedings of the World Health Organisation Study Group on Psychological Development of the Child*
18. Piaget, J. (1970). Piaget's theory. In P.H. Mussen (Ed.). *Carmichael's manual of child psychology*, 703-732, New York Wiley
19. Piaget, J. Piaget's theory. 1970 In P. H. Mussen (Ed.), *Carmichael's manual of child psychology*, pp. 703-732, New York: Wiley.

20. Valkenburg, P.M. and Buijzen, M. (2005). Identifying determinants of young children's brand awareness: television, parents, and peers. *Applied Developmental Psychology*, 26, 456-68.
21. Watkins, L., Aitken, R., Robertson, K., Thyne, M., & Williams, J. (2016). Advertising's impact on pre-schoolers' brand knowledge and materialism. *International Journal of Consumer Studies*, 40(5), 583-591.
22. Watkins, L., Aitken, R., Thyne, M., Robertson, K., & Borzekowski, D. (2017). Environmental influences on pre-schooler's understanding of brand symbolism. *Marketing Intelligence & Planning*.