

**ΟΙΚΟΝΟΜΙΚΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΑΘΗΝΩΝ**



ATHENS UNIVERSITY
OF ECONOMICS
AND BUSINESS

Shopping Missions and their Impact
on Assortment Organization:
An Analytics-informed Shopper Marketing Approach

by
Panagiotis Sarantopoulos

A doctoral dissertation submitted in partial fulfillment of
the requirements for the Doctor of Philosophy degree in
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ATHENS UNIVERSITY
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DEPARTMENT OF
MANAGEMENT
SCIENCE &
TECHNOLOGY

Οι Αγοραστικές Αποστολές και η Επίδρασή τους
στην Οργάνωση της Προϊοντικής Συλλογής:
Μια Προσέγγιση Πληροφορούμενη από Τεχνικές Επιχειρηματικής Αναλυτικής

του
Παναγιώτη Σαραντόπουλου

Διδακτορική διατριβή υποβληθείσα ως μερική εκπλήρωση
των υποχρεώσεων για την απονομή του τίτλου του
Διδάκτορα της Διοικητικής Επιστήμης και Τεχνολογίας
της Σχολής Διοίκησης Επιχειρήσεων του
Οικονομικού Πανεπιστημίου Αθηνών

Επιβλέποντες Καθηγητές:
Καθ. Γεώργιος Δουκίδης, ΟΠΑ
Αναπλ. Καθ. Κατερίνα Πραματάρη, ΟΠΑ
Αναπλ. Καθ. Αριστείδης Θεοτόκης, University of Leeds

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Σε όλους τους ενθουσιωδώς έτοιμους να εγκαταλείψουν υψηλές απολαβές και εργασιακή ασφάλεια ως αντάλλαγμα για την ελευθερία και τις ανταμοιβές της ακαδημαϊκής ζωής





ΕΥΧΑΡΙΣΤΙΕΣ

Το κείμενο αυτό βρίσκεται στα χέρια σας χάρη στην υποστήριξη πολλών ανθρώπων. Στον περιορισμένο αυτόν χώρο θα προσπαθήσω να ευχαριστήσω όλους εκείνους που με βοήθησαν και συνεχίζουν να με βοηθούν όλο αυτόν τον καιρό.

Αρχικά, θέλω να εκφράσω τη βαθύτατη ευγνωμοσύνη μου προς τους επιβλέποντες καθηγητές μου, τους ανθρώπους που αγάλιασαν το ενδιαφέρον μου για την ακαδημαϊκή έρευνα και διδασκαλία και με τη βοήθεια, καθοδήγηση και υποστήριξη τους ωρίμασα σαν ερευνητής αλλά και σαν άνθρωπος. Θα ήθελα να ευχαριστήσω τον Καθ. Γεώργιο Δουκίδη που με την εμπειρία και το κύρος του προσωποποιεί ένα υπόδειγμα ακαδημαϊκής σταδιοδρομίας. Ίδρυσε και οικοδόμησε ένα ερευνητικό κέντρο πρότυπο για την Ελλάδα και εφάμιλλο ιδρυμάτων του εξωτερικού, αισθάνομαι τυχερός που είμαι μέλος του. Θέλω από καρδιάς να ευχαριστήσω την Αναπλ. Καθ. Κατερίνα Πραματάρη. Είναι ένας άνθρωπος ξεχωριστός, εγκάρδιος και προσιτός που πίστεψε σε εμένα από την πρώτη στιγμή. Ήταν πάρα πολλές οι φορές που κατάλαβε τον ψυχισμό μου, με εμπιστεύτηκε και μου πρόσφερε απλόχερα την υποστήριξη και την καθοδήγηση που χρειάστηκα. Θέλω ακόμη να πω ένα ξεχωριστό ευχαριστώ στον Αναπλ. Καθ. Αριστείδη Θεοτόκη που αποτελεί για εμένα ένα πρότυπο νέου ερευνητή. Του είμαι ιδιαίτερα ευγνώμων για τις απολαυστικές συζητήσεις μας σχετικά με την υπόσταση και τις συσχετίσεις μεταξύ αφηρημένων εννοιών. Δε θα ήταν υπερβολή να πω πως έπαιξε καταλυτικό ρόλο στη διαδικασία δόμησης της ερευνητικής μου σκέψης.

Η παρούσα διατριβή αποτελεί μέρος μιας διαχρονικής ερευνητικής προσπάθειας στον ευρύτερο χώρο του λιανεμπορίου στο εργαστήριο Ηλεκτρονικού Εμπορίου και Επιχειρείν (ELTRUN). Ευχαριστώ θερμά τους συναδέλφους ερευνητές του ELTRUN και του Τμήματος Διοικητικής Επιστήμης και Τεχνολογίας του Οικονομικού Πανεπιστημίου Αθηνών που μου



μετέδωσαν το αίσθημα του ανείκειν. Είναι πολύ σημαντικό να μπορείς να μοιραστείς τις ανησυχίες, απογοητεύσεις και χαρές που γενναιόδωρα σου προσφέρει η διαδικασία εκπόνησης ενός διδακτορικού.

Θα ήθελα επίσης να ευχαριστήσω τα στελέχη των εταιριών Μαρινόπουλος ΑΕ και Πρόκτερ & Γκαμπλ Ελλάς ΕΠΕ, χωρίς την υποστήριξη των οποίων η έρευνα αυτή δε θα μπορούσε να πραγματοποιηθεί, αλλά και τους συμμετέχοντες στο ECR Europe Leaders' Forum, που μας τίμησαν με το ECR Europe Best Activation Award 2015.

Τέλος, ευχαριστώ από τα βάθη τις καρδιάς μου τους δικούς μου ανθρώπους, την οικογένεια και τους φίλους μου, που αν και αρχικά ξαφνιάστηκαν από τον ενθουσιασμό με τον οποίο εγκατέλειψα την εργασιακή ασφάλεια της προηγούμενης απασχόλησής μου, ιδιαίτερα εν μέσω μιας οικονομικά δυσμενούς εποχής, έχουν σταθεί και στέκονται πάντα δίπλα μου στα σταυροδρόμια της ζωής μου.



ΠΕΡΙΛΗΨΗ

Η παρούσα διδακτορική διατριβή παρέχει τη θεωρητική βάση για την έννοια της αγοραστικής αποστολής και μελετά την επίδραση αυτής στο πεδίο της οργάνωσης της προϊοντικής συλλογής ακολουθώντας μια προσέγγιση πληροφορούμενη από τεχνικές επιχειρηματικής αναλυτικής. Οι ενέργειες μάρκετινγκ μέσα στο κατάστημα (shopper marketing) αναφέρονται, τόσο από τις λιανεμπορικές επιχειρήσεις όσο και από τους προμηθευτές τους, ως οι ενέργειες με τη μεγαλύτερη επίδραση στις λιανικές πωλήσεις. Η ακαδημαϊκή βιβλιογραφία, επιπλέον, αναγνωρίζει τις βασικές ιδιότητες και χαρακτηριστικά των διαφορετικών τύπων επισκέψεων στα καταστήματα σουπερμάρκετ και κατατάσσει αυτές με βάση το επίπεδο αφαιρετικότητας (level of abstractness) που τα διέπει. Σύμφωνα με αυτή τη θεώρηση, οι επισκέψεις κυμαίνονται από πολύ σαφείς και συγκεκριμένες (π.χ., η αγορά μιας συγκεκριμένης και ειδικής προσφοράς) σε πολύ αφηρημένες (π.χ., η αγορά ενός συνόλου αγαθών για όλη την εβδομάδα ή περισσότερο). Οι ενδιάμεσες, σχετικώς συγκεκριμένες επισκέψεις, όπως η αγορά προϊόντων για άμεση ή αυθημερόν κατανάλωση, σηματοδοτούν τους λόγους για τους οποίους οι καταναλωτές έχουν έρθει στο κατάστημα και παρέχουν πληροφορίες πολύτιμες για την ανάπτυξη στοχευμένων και αποτελεσματικών ενεργειών μάρκετινγκ μέσα στο κατάστημα.

Τέτοιου είδους προσεγγίσεις ακολουθούνται ήδη από ηγέτιδες επιχειρήσεις και εταιρίες συμβούλων του κλάδου του λιανεμπορίου, οι οποίες αντιλαμβάνονται τις καταναλωτικές ανάγκες ως βάσεις για την κατανόηση των αγοραστικών επισκέψεων και ως έναυσμα επακριβών «αγοραστικών αποστολών» (shopping missions). Παραδείγματα αγοραστικών αποστολών στο λιανεμπόριο τροφίμων και των ταχυκίνητων καταναλωτικών προϊόντων είναι «πρωινό», «μεσημεριανό γεύμα», «κολατσιό», «καθαρισμός σπιτιού», «βρεφική φροντίδα», «πάρτυ γενεθλίων» κ.ά. Η αναγνώριση και κατανόηση των κυρίαρχων αγοραστικών αποστολών ανά



κατάστημα ή/και τυπολογία (format) καταστήματος προσφέρει στις λιανεμπορικές επιχειρήσεις τη δυνατότητα ανάπτυξης ενεργειών μάρκετινγκ μέσα στο κατάστημα και στους προμηθευτές καταναλωτικών προϊόντων τη δυνατότητα στρατηγικής τοποθέτησης επώνυμων προϊόντων με στόχο την καλύτερη εξυπηρέτηση του καταναλωτή μέσω της διευκόλυνσης (convenience) και της σχετικότητας (relevance).

Η παρούσα διδακτορική έρευνα μελετά την επίδραση της αναγνώρισης και κατανόησης των αγοραστικών αποστολών στο πεδίο της οργάνωσης της προϊοντικής συλλογής (assortment organization). Συγκεκριμένα χρησιμοποιεί τον όρο οργάνωση προϊοντικής συλλογής βάσει αγοραστικών αποστολών (mission-based assortment organization) για να περιγράψει την οργάνωση των προϊοντικών κατηγοριών (cross-category organization) με τρόπο που να υποδηλώνει και να επικοινωνεί τις αγοραστικές αποστολές που υποστηρίζονται (π.χ. «πρωινό», «μεσημεριανό γεύμα», «κολατσιό»). Η οργάνωση της προϊοντικής συλλογής βάσει αγοραστικών αποστολών συγκρίνεται με αυτή της ταξινομικής (taxonomic), που είναι η πιο συνήθης και περιλαμβάνει την ομαδοποίηση των κατηγοριών που μοιράζονται τα ίδια φυσικά χαρακτηριστικά (π.χ. «φρέσκα», «κατεψυγμένα», «τυποποιημένα τρόφιμα μακράς διάρκειας»).

Η επισκόπηση της σχετικής βιβλιογραφίας επιχειρεί να τοπογραφήσει προηγούμενες σχετικές έρευνες και να συνδέσει χρήσιμες θεωρίες και σημαντικούς ερευνητές του χώρου. Το δεύτερο κεφάλαιο της διατριβής κάνει μια επισκόπηση στην περιοχή της καθοδηγούμενης (purposive) συμπεριφοράς των καταναλωτών καθώς και στο διαχωρισμό μεταξύ της τοποθέτησης (setting) και της διαδικασίας επίτευξης (striving) των καταναλωτικών στόχων. Ακόμη, παρουσιάζεται η θεωρία του τρόπου σκέψης (mindset theory) των φάσεων δράσης (action phases). Παρέχονται έτσι ορισμένες πρώτες ενδείξεις σχετικά με τον ορισμό του εννοιολογικού κατασκευάσματος της αγοραστικής αποστολής. Στη συνέχεια γίνεται μια



επισκόπηση στην περιοχή της οργάνωσης της προϊοντικής συλλογής στο λιανεμπόριο. Τέλος, γίνεται μια επισκόπηση στην ψυχολογία του μεταγινώσκειν (metacognition) και παρουσιάζεται η έννοια της ευχέρειας επεξεργασίας (processing fluency) με στόχο την κατανόηση της επίδρασης των αγοραστικών αποστολών στο πεδίο της οργάνωσης της προϊοντικής συλλογής.

Το τρίτο κεφάλαιο αφορά στο γενικό εννοιολογικό πλαίσιο που χρησιμοποιείται για να επιτευχθεί η ανάπτυξη των ερευνητικών υποθέσεων που θα εξεταστούν μέσω της μετέπειτα συλλογής, επεξεργασίας κι ανάλυσης εμπειρικών δεδομένων. Συγκεκριμένα, γίνεται μια αποσαφήνιση της σχέσης μεταξύ του αγοραστικού στόχου (shopping goal), του αγοραστικού τρόπου σκέψης (shopping mindset) και της αγοραστικής αποστολής (shopping mission). Για την αγοραστική αποστολή δίδεται ο ακόλουθος ορισμός: *η τιμή (value) που παίρνει ο αγοραστικός διαβουλευτικός τρόπος σκέψης (deliberative shopping mindset) ή, διαφορετικά, μια προϊοντική κατηγοριοποίηση της επίσκεψης στο σουπερμάρκετ που αναφέρεται στις αναγνωρισμένες ανάγκες του καταναλωτή όταν εισέρχεται στο κατάστημα.* Στη συνέχεια γίνεται η ανάπτυξη των ερευνητικών υποθέσεων σχετικά με το ταίριασμα (congruence) του αγοραστικού τρόπου σκέψης και της οργάνωσης της προϊοντικής συλλογής σε σχέση με τις μη προγραμματισμένες αγορές (H₁) και το μέγεθος του καλαθιού (H₂). Ακόμη, γίνεται η ανάπτυξη της ερευνητικής υπόθεσης σε σχέση με την ευχέρεια επεξεργασίας (processing fluency) και τον ρυθμό αγορών (purchase rate), ως την αντικειμενικά μετρούμενη υπόστασή της μέσα στο κατάστημα (H₃). Πιο συγκεκριμένα:

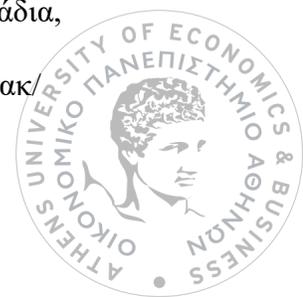
- H₁: Η οργάνωση της προϊοντικής συλλογής βάσει αγοραστικών αποστολών (ταξινομική) οδηγεί σε περισσότερες μη προγραμματισμένες αγορές για τους καταναλωτές που φέρουν διαβουλευτικό (εκτελεστικό) αγοραστικό τρόπο σκέψης.
- H₂: Η οργάνωση της προϊοντικής συλλογής βάσει αγοραστικών αποστολών (ταξινομική) οδηγεί σε μεγαλύτερο καλάθι για τους καταναλωτές που φέρουν διαβουλευτικό (εκτελεστικό) αγοραστικό τρόπο σκέψης.



H3: Τόσο η ευχέρεια επεξεργασίας όσο και ο ρυθμός αγορών μεσολαβούν στην επίδραση μεταξύ του ταιριάσματος του αγοραστικού τρόπου σκέψης και της οργάνωσης της προϊοντικής συλλογής και της αγοραστικής συμπεριφοράς του καταναλωτή, ούτως ώστε η οργάνωση της προϊοντικής συλλογής βάσει αγοραστικών αποστολών (ταξινομική) οδηγεί σε μεγαλύτερη ευχέρεια επεξεργασίας και ρυθμό αγορών για τους καταναλωτές που φέρουν διαβουλευτικό (εκτελεστικό) αγοραστικό τρόπο σκέψης.

Το τέταρτο κεφάλαιο αφορά την ερευνητική μεθοδολογία που ακολουθήθηκε στην παρούσα διδακτορική διατριβή και περιλαμβάνει μια συζήτηση περί των ερευνητικών και επιστημολογικών προσεγγίσεων για το εμπειρικό της μέρος. Ακόμη, παρουσιάζεται ο συνολικός ερευνητικός σχεδιασμός και οι επιμέρους εμπειρικές μελέτες ενώ παρατίθενται οι μέθοδοι συλλογής, επεξεργασίας, και ανάλυσης των εμπειρικών δεδομένων βάσει των οποίων έγινε ο έλεγχος των ερευνητικών υποθέσεων του εννοιολογικού μοντέλου.

Η εμπειρική έρευνα της διδακτορικής διατριβής χωρίζεται σε διερευνητικό και επεξηγηματικό μέρος. Το διερευνητικό μέρος, που περιγράφεται στο πέμπτο κεφάλαιο, περιλαμβάνει την ανάπτυξη μια μεθόδου αναγνώρισης των αγοραστικών αποστολών για καταστήματα σουπερμάρκετ μέσω της ανάλυσης δεδομένων από τερματικά συστήματα πώλησης (point-of-sale systems). Για την επαλήθευση της μεθόδου και την επίδειξη της χρησιμότητάς της εξετάστηκαν 4 εκατομμύρια καλάθια (αγοραστικές επισκέψεις) από δύο καταστήματα για κάθε τυπολογία καταστήματος μιας συνεργαζόμενης αλυσίδας σουπερμάρκετ (σύνολο 6 καταστήματα). Τα δεδομένα αφορούν πωλήσεις για ένα διάστημα 17 μηνών (από τον Ιανουάριο 2012 έως τον Μάιο 2013). Τα καλάθια χαρακτηρίστηκαν με βάση το περιεχόμενό τους και καταμερίστηκαν, μέσω της μεθόδου της συσταδοποίησης (clustering) σε ομοειδείς ομάδες βάσει του συνδυασμού των προϊοντικών κατηγοριών που τα αποτελεί. Η ανάλυση ανέδειξε ένα πλήθος αγοραστικών αποστολών όπως: πρωινό (γάλα, αρτοσκευάσματα, χυμοί, καφέ, δημητριακά, κ.ά.), κύριο γεύμα (φρέσκα λαχανικά, κόκκινο κρέας, λευκά τυριά, λάδια, κοτόπουλο, κ.ά.), καθαριότητα (καθαριστικά σπιτιού, απορρυπαντικά, χαρτικά, κ.ά.), σνακ/



κολατσιό (αναψυκτικά, σοκολάτες, μπισκότα, μπίρες, πατατάκια, παγωτά, κ.ά.), τوست (τυριά σε φέτες, αλλαντικά σε φέτες, ψωμί του τوست, κ.ά.). Τα αποτελέσματα της μεθόδου ερμηνεύτηκαν μέσω της διεξαγωγής συζητήσεων σε ομάδες εστίασης (focus groups) με καταναλωτές με στόχο την κατανόηση και τον ορισμό των αγοραστικών αποστολών αλλά και την ανάπτυξης μιας οργάνωσης της προϊοντικής συλλογής βάσει αγοραστικών αποστολών για ένα από τα καταστήματα που αναλύθηκαν.

Το επεξηγηματικό εμπειρικό μέρος της έρευνας, που αποτελεί το κεφάλαιο 6 της διατριβής, αφορά στον έλεγχο των ερευνητικών υποθέσεων του εννοιολογικού μοντέλου. Για την τελεστικοποίηση (operationalization) της οργάνωσης της προϊοντικής συλλογής αξιοποιήθηκε το παραπάνω κατάστημα με επιφάνεια πώλησης 1000 τμ.. Συγκεκριμένα η αρχική οργάνωση της προϊοντικής συλλογής του καταστήματος αποτέλεσε την ταξινομική εκδοχή και η οργάνωση του καταστήματος που αναπτύχθηκε μετά τα αποτελέσματα της μεθόδου αναγνώρισης αγοραστικών αποστολών και των συζητήσεων σε ομάδες εστίασης αποτέλεσε την εκδοχή βάσει αγοραστικών αποστολών. Για τις ανάγκες δυο εργαστηριακών πειραμάτων οι δύο εκδοχές του καταστήματος αποτυπώθηκαν ψηφιακά σε μια οθόνη μεγάλου μεγέθους τρισδιάστατης προβολής στο κέντρο έρευνας ενός συνεργαζόμενου προμηθευτή ταχυκίνητων προϊόντων. Για τις ανάγκες ενός οιονεί πειράματος πεδίου οι δύο εκδοχές του καταστήματος αφορούσαν στην αρχική οργάνωση (ταξινομική) και εκείνη που προέκυψε μετά από ανακαίνιση (βάσει αγοραστικών αποστολών).

Τόσο στην περίπτωση των εργαστηριακών πειραμάτων όσο και στην περίπτωση του οιονεί πειράματος πεδίου ακολουθήθηκε σχεδιασμός ανεξάρτητων δειγμάτων (between-subjects design). Για τα εργαστηριακά πειράματα τυχαίο δείγμα καταναλωτών, κάτοχοι κάρτας πιστότητας της συνεργαζόμενης αλυσίδας, κλήθηκαν να εκτελέσουν μια τυπική αγοραστική



επίσκεψη σε μια εκ των δύο εκδοχών της οργάνωσης της προϊοντικής συλλογής όπως αυτές αποτυπώθηκαν ψηφιακά στο κέντρο έρευνας του συνεργαζόμενου προμηθευτή. Για το οιονεί πείραμα πεδίου τυχαίο δείγμα καταναλωτών συμμετείχε με μετρήσεις πριν (ταξινομική) και μετά (βάσει αγοραστικών αποστολών) την αναδιάταξη του καταστήματος. Πλήθος μεταβλητών καταγράφηκε κατά την πειραματική διαδικασία, όπως: το μέγεθος καλαθιού, ο χρόνος περάτωσης της επίσκεψης, ο αριθμός μη προγραμματισμένων αγορών, οι κατηγορίες προϊόντων, καθώς και αντιλήψεις και στάσεις των καταναλωτών σε σχέση με το κατάστημα (ευκολία, ταχύτητα αγορών, ποικιλία προϊόντων στο κατάστημα, αισθητική, κ.ά.).

Τα αποτελέσματα του πρώτου εργαστηριακού πειράματος ($N = 78$) παρέχουν αρχική υποστήριξη για την H_3 , δηλαδή, τον ισχυρισμό ότι το ταίριασμα του αγοραστικού τρόπου σκέψης και της οργάνωσης της προϊοντικής συλλογής επηρεάζει την ευκολία με την οποία οι καταναλωτές εκτελούν μια αγοραστική επίσκεψη. Ενώ τα ευρήματα του δεύτερου εργαστηριακού πειράματος ($N = 160$) υποστηρίζουν τις H_1 , H_2 και H_3 , δηλαδή ότι το ταίριασμα του αγοραστικού τρόπου σκέψης και της οργάνωσης της προϊοντικής συλλογής οδηγεί, μέσω μιας μεγαλύτερης υποκειμενικής αίσθησης ευκολίας, σε περισσότερες μη προγραμματισμένες αγορές. Τα αποτελέσματα του οιονεί πειράματος πεδίου ($N = 201$) παρέχουν υποστήριξη για τις H_1 και H_2 σε ένα πραγματικό περιβάλλον. Σε συμφωνία και τα προηγούμενα αποτελέσματα, το ταίριασμα του αγοραστικού τρόπου σκέψης και της οργάνωσης της προϊοντικής συλλογής επηρεάζει άμεσα τον αριθμό και το ρυθμό αγορών ιδιαίτερα σε περίπτωση διαβουλευτικού αγοραστικού τρόπου σκέψης. Επιπλέον, το πείραμα πεδίου επέτρεψε να μελετηθεί ο αντίκτυπος των παραπάνω επιδράσεων σε επίπεδο καταστήματος, συγκρίνοντας εβδομαδιαία στοιχεία πωλήσεων δύο καταστημάτων. Τα αποτελέσματα ανάλυσης παλινδρόμησης καταδεικνύουν ότι ο



σχετικός δείκτης μεγέθους καλαθιού αυξάνεται με την οργάνωση της προϊοντικής συλλογής βάσει αγοραστικών αποστολών.

Στο έβδομο και καταληκτικό κεφάλαιο γίνεται μια γενική σύνοψη της διατριβής και των αποτελεσμάτων της και παρατίθενται εκ νέου οι κύριες συνεισφορές της στη θεωρία και την πρακτική της περιοχής των ενεργειών μάρκετινγκ μέσα στο κατάστημα. Ακόμη γίνεται μια αναφορά στους περιορισμούς της διατριβής και κατατίθενται προτάσεις για μελλοντική έρευνα τόσο σε σχέση με το εννοιολογικό πλαίσιο όσο και με τον ερευνητικό σχεδιασμό της.





ABSTRACT

This doctoral dissertation provides the theoretical basis for the concept of shopping mission and studies its impact in the area of assortment organization by following an analytics-informed shopper marketing approach. In particular, it evangelizes that instead of seeking to buy a set of individual (and often isolated) product categories, consumers mostly look for cross-category solutions that address their household and consumption needs. These need-states form the basis for triggering precise “shopping missions.” Examples of grocery shopping missions are “breakfast,” “lunch meal,” “birthday party,” etc. This dissertation develops and tests a conceptual framework that models the effects of the congruence between assortment organization and shopping mindset on a number of consumer behavioral variables, such as basket size, shopping duration and unplanned purchases. The empirical research of this doctoral dissertation is divided into exploratory and explanatory phases. The exploratory phase includes the development of a method of identifying shopping missions from point-of-sale (POS) data and a series of focus group discussions with consumers in order to understand and define shopping missions and apprehend their conceptual relationship with shopping goals and shopping mindsets. The explanatory phase of this dissertation seeks to determine the nature of the relationship between the assortment organization and shopping mindset and to test hypotheses with respect to the effects to be predicted on basket size, purchase rate and unplanned purchases. It includes two laboratory experiments using virtual store technology and a field (quasi-) experiment. The dissertation concludes by providing a number of contributions to the theory and practice of shopper marketing, references to the limitations of this research, as well as avenues for future research.





RELATED PUBLICATIONS

Journal Articles

- “Shopping missions: An analytical method for the identification of shopper need states” (with A. Theotokis, K. Pramataris, and G. Doukidis), *Journal of Business Research* (2016), 69 (3), pp. 1043 – 52.

Working Papers and Work under Review

- “When the store just feels right: The effect of shopping mission-based assortment organization on purchase behavior” (with A. Theotokis and K. Pramataris), under review at *Journal of Marketing*.
- “Mission-layout incongruence and its impact on cart abandonment and promotion proneness” (with A. Theotokis and K. Pramataris).
- “Store remodeling impact assessment: An interrupted time series approach”

Conference Papers and Presentations

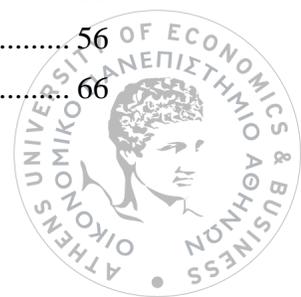
- “When the store just feels right: The effect of merchandise organization and shopping mindset on basket size and unplanned buying” (March 2015) presented at the *2nd Triennial American Marketing Association/ American Collegiate Retailing Association Conference*, Miami, FL (with A. Theotokis and K. Pramataris).
- “A data mining-based framework to identify shopping missions” (September 2014) presented at the *8th Mediterranean Conference on Information Systems*, Verona, Italy (with A. Griva, C. Bardaki, and D. Papakiriakopoulos).
- “Identifying and exploiting consumption needs: An analytics-enhanced shopper marketing approach” (June 2014) presented at the *43rd European Marketing Academy Annual Conference*, Valencia, Spain (with A. Theotokis, K. Pramataris, and G. Doukidis).
- “Identifying shopping missions by mining point-of-sale data” (May 2014) presented at the *2014 Shopper Marketing & Pricing Conference*, Stockholm, Sweden (with A. Theotokis and K. Pramataris)





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CHAPTER 1 – INTRODUCTION

This opening chapter introduces the reader to the purpose and goals of this doctoral dissertation and creates a setting for its research. It begins by laying the motivation for undertaking this research and by positioning its topic within its research context. Subsequently, it sets a number of pertinent research gaps and questions. Finally, it concludes by providing the dissertation outline.

1.1 Research Motivation

The importance of shopper marketing, that is, the planning and execution of all marketing activities that influence a shopper along and beyond the entire path to purchase (Shankar et al. 2011), is clear; both retailers and shoppers cite shopper marketing as having the biggest influence on retail sales (Progressive Grocer 2014). Marketing literature acknowledges the essential qualities of different types of shopping trips (Walters and Jamil 2003), ranging from the very precise and concrete (e.g., to take advantage of a specific promotion) to rather abstract (e.g., to shop for the whole week or more) (Bell, Corsten, and Knox 2011). Relatively concrete shopping trips, such as the purchase of products for immediate or same-day consumption, explicitly signal the reasons shoppers enter stores and provide information valuable for the development of targeted, relevant, and effective shopper marketing activities. Such an approach is already evident to retail practitioners, who regard consumption needs as bases for understanding shopping needs and triggering precise “shopping missions” ([IBM] 2005; Efficient Consumer Response [ECR] Europe 2011; Information Resources Inc. [IRI] 2006). By understanding these “missions,” retailers can develop format- or even store-specific, mission-informed shopper marketing actions, while consumer goods manufacturers can strategically



position brands within shopping missions as a means to increase relevance to and convenience for shoppers. For instance, retailers might be interested to see if consumers purchase for breakfast only as part of major trips, and manufacturers may seek to improve the penetration of a product category in the “meal,” rather than just the “breakfast,” shopping mission, as well as understand the conditions in which certain trips occur, the link to money spent, and the influences on coupon redemption and pricing decisions.

Prior literature advocates that product categories can provide a basis for identifying latent shopping goals and choices. Shopping trip planning occurs at the category rather than the brand or stock-keeping unit (SKU) level (Block and Morwitz 1999). Sales data make sales affinities across product categories readily available. The omnipresence of point-of-sale (POS) systems and recent advances in analytical and data processing capabilities for marketing research (Germann, Lilien, and Rangaswamy 2013; Lilien 2011) spur the exploitation of sales data for the development of actionable shopper insights (Fox and Sethuraman 2006; Humby and Hunt 2003; Pramatarı, Evgeniou, and Doukidis 2009). The identification of shopping missions, that is, the identification of need states as captured in purchasing patterns solely from sales data, gives retailers the possibility, with modest investments, to gain information about a host of targeted shopper marketing activities.

One of the many shopper marketing actions that data-driven shopping missions can inform is the organization of product assortments. Undeniably, organizing retail assortments to better meet consumer shopping needs in the path to purchase is of utmost importance for both online and bricks-and-mortar retailers (Information Resources Inc. [IRI] 2015). The most common assortment organization strategy—that is, taxonomic (Chernev 2011) or substitute-based organization (Diehl, Herpen, and Lamberton 2015), involves grouping together categories



that share the same physical characteristics. Examples of taxonomic organizations include groups of “fresh,” “frozen,” and “cupboard” food for groceries; “gold,” “silver,” and “diamond” for jewelry; and “pants,” “trousers,” and “accessories” for apparel. In their quest to increase relevance and convenience, but also to drive category and basket growth, retailers have recently begun organizing product categories according to the shopping goals they serve (Information Resources Inc. [IRI] 2015)—that is, goal-driven or complements-based organization (Chernev 2011; Diehl, Herpen, and Lambertson 2015). In this doctoral research, the term “mission-based” assortment organization is used to indicate the goal-derived and cross-category assortment organization, in which product categories are organized to construct and signify the underlying shopping mission they address (Diehl, Herpen, and Lambertson 2015; Englis and Solomon 1996; Sarantopoulos et al. 2016). Examples of shopping mission-based organizations include groups of “breakfast,” “lunchtime meal deal,” and “barbecue party” for groceries; “gift,” “engagement,” and “anniversary” for jewelry; and “going out,” “office,” and “sportswear” for clothing.

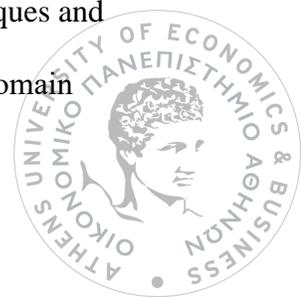
Extant research on assortment organization has focused primarily on within-category organizations and examined how organizing product options within a category (e.g., by brand or attribute) may affect consumer perceptions of variety (Kahn and Wansink 2004), learning and satisfaction (Poynor and Wood 2010), substitutability (Lambertson and Diehl 2013), and subsequent unrelated decisions (Ülkümen, Chakravarti, and Morwitz 2010). Only recently has research begun investigating how between-category assortment organization, based on complements or substitutes, may affect consumer store choice (Diehl, Herpen, and Lambertson 2015). However, little is still known about how different assortment organizations affect in-store purchase behavior. Initial evidence suggests that organizing categories in congruence with consumer shopping goals has a positive effect on consumer decisions (Morales et al. 2005;



Sarantopoulos, Theotokis, and Pramataris 2016). With a mission-based organization, retailers can maximize sales of products that shoppers have not considered shopping and minimize lost sales from shoppers who are unable to locate products. In contrast, placing mission-relevant categories together may decrease the time spent and the actual distance covered in the store (or number of pages browsed online). Such effort-minimizing effects might please consumers but repel retailers, because previous research indicates that unplanned purchases and basket size increase with time spent in the store and the number of aisles shopped (Granbois 1968; Hui et al. 2013; Park, Iyer, and Smith 1989). Therefore, it is critical for managers to understand whether and when mission-based assortment organizations will have a positive impact on in-store purchase behavior.

1.2 Research Context

The Validity Network Schema developed by Brinberg and McGrath (1988) is employed to better describe the research context of this doctoral research. This framework describes the research process as a structural combination of the substantive, conceptual, and methodological, research domains. The *substantive domain* highlights practical, real world issues that need to be explored. The substantive domain of this doctoral dissertation involves shopping missions and the organization of product assortments as these are described in the preceding research motivation section. The *conceptual domain* involves theoretical frameworks that help depict how the various concepts underlying the particular phenomenon of interest link together. The conceptual domain of this doctoral dissertation draws from social psychology and in particular from the motivational mindset theory of action phases and from metacognitive literature and the construct of processing fluency. Finally, the *methodological domain* pertains to the toolbox of techniques and data that researchers can use to assess the situation. This dissertation's methodological domain



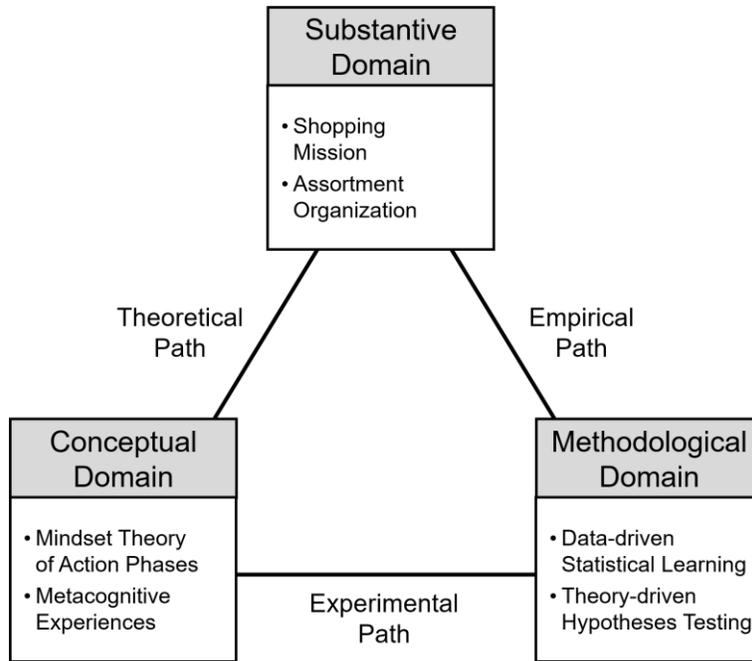
rests on novel data-driven methods of statistical learning that rely on the partitioning of large amounts of empirical observations into training and testing sets to evaluate the models and conclusions induced from observations. Moreover, this dissertation employs more established theory-driven or theory-testing approaches such as analysis of variance and regression analysis. In general, the substantive, methodological, and theoretical domains serve as the underpinnings of the various research endeavors included in this doctoral dissertation.

McGrath and Brinberg (1983) also explain that the three research domains and their combinations result in three alternative research paths that researchers may take to pursue a given research project: experimental, theoretical, and empirical. By adopting a particular path, researchers confront validity trade-offs (e.g., external vs. internal) that they must address. Each path also involves a primary combination of two research domains, with an application in the third domain. For example, on the *theoretical path*, researchers combine theories and constructs from the conceptual domain and insights and issues from the substantive phenomenon to develop testable research hypotheses or predictions, which they then test using appropriate methods. The literature review as well as the conceptual framework dissertation chapters seek move along this path. On the *empirical path*, the researcher starts with the substantive phenomenon and tools and techniques from the methodological domain to observe the phenomenon empirically, then develops concepts on the basis of these observations. The exploratory empirical research of this doctoral dissertations embarks upon the substantive phenomenon of shopping mission and draws on the cluster analytical method from the methodological domain to reveal hitherto unknown relationships between shopping missions, goals, and mindsets. Finally, on the *experimental path*, a researcher can combine theories and constructs from the conceptual domain and methods and techniques from the methodological domain to test the theory in a substantive domain. The



explanatory empirical research of this doctoral dissertation adheres to this research path. Figure 1 illustrates the application of the Validity Network Schema to the topic of this doctoral dissertation.

Figure 1: Research Domains and Pathways of this Doctoral Dissertation



Adapted from McGrath and Brinberg (1983)

1.3 Research Gaps and Questions

Several researchers in both the consumer behavior and the retailing literature spotlight the benefits of shopping trip categorization (Bell, Corsten, and Knox 2011; Nordfält 2009; Reutterer and Teller 2009; Theotokis, Pramataris, and Tsiros 2012; Walters and Jamil 2003). Similarly, retail practitioners and technology providers seek to identify essential qualities of different shopping trip types ([IBM] 2005; Information Resources Inc. [IRI] 2006). However, current insights on trip-level shopper goals and objectives remain confined to understanding *how* consumers shop, by



segmenting shopping trips on the conceptual grounds of overall shopping trip abstractness (Information Resources Inc. [IRI] 2006; Wall Street Journal 2010). There is a need for a theoretical construct that goes beyond the segmentation of trip types, to the discovery of constellations of complementary grocery product categories whose sales affinity forms the basis for understanding specific “need states” or *why* a shopper visits the store.

- **RQ1:** *How can we conceptually describe the essential qualities of different shopping trips on the basis of why a shopper visits the store?*

Prior research has benefited from the conceptual distinction between deliberative and implemental mindsets to explain in-store behavior. For example, Dhar, Huber, and Khan (2007) suggest the switch between a deliberative and an implemental mindset is the psychological mechanism behind the “shopping momentum” effect. Similarly, Lee and Ariely (2006) propose that the point of the shopping course (i.e., upon store entrance vs. when browsing through the store’s interior) influences the mindsets of shoppers, which in turn influences their proneness to promotions. Büttner, Florack, and Göritz (2013) posits that preshopping factors, such as consumers’ chronic shopping orientation, influence consumers’ mindsets. However, there is no research to date to argue that shopping mindset is a physiological process contingent on the overall shopping trip goal assumed by the shopper prior to entering the store. Thus, the conceptual relationship of shopping goal, mindset, and mission needs to be examined.

- **RQ2:** *What is the conceptual relationship between shopping goals, mindsets and missions?*

The identification of consumer insights from sales data has a long history in the marketing literature. Prior research employs grocery scanner data to investigate consumer behavioral reactions to price promotions (P. S. H. Leeflang and Parreño-Selva 2011; Mayhew



and Winer 1992), brand choice (Chib, Seetharaman, and Strijnev 2014), and cross-category price elasticities (Russell and Petersen 2000), as well as to segment shoppers on the basis of basket size (Bell and Lattin 1998) or other variables such as trip frequency and wallet share (Talukdar, Gauri, and Grewal 2010). However, there is no research up to date to develop a method, not for the investigation of consumer reactions, or the segmentation of shoppers, but for the segmentation of store visits for the identification of the predominant reasons that consumers enter the store.

- **RQ3:** *How can we identify shopping missions from grocery sales data?*

Retailers and manufactures of consumer packaged goods increasingly understand that their ability to compete is tied to their ability to create and harness value from data, and are seeking new ways to look at big data and beyond. Insights from analytics, such as the identification of shopping missions, help firms understand who their shoppers are, but also how, where, when, and more importantly, what they are purchasing. However, research on how, insights gained from analytics, can inform shopper marketing actions and effectively improve the performance of your stores is needed.

- **RQ4:** *How can shopping missions inform shopper marketing actions?*

Prior research distinguishes between a taxonomic and goal-derived (Chernev 2011) organization of assortments. Taxonomic organization involves arranging products based on their inherent characteristics, such as category, manufacturer, size, or type, while goal-derived organization groups options according to the underlying consumer goal they serve. However, while the conceptualization and operationalization of taxonomic organizations is relatively straightforward, this is not always the case with goal-derived assortment organizations.



Moreover, research on the effects of between-category assortment organizations is scarce and limited on the effects of substitute- vs. complements-based assortment organization on and effort and store preference (Diehl, Herpen, and Lamberton 2015). No research to date has examined how the congruence between shopping mission instantiations of shopping goals and the organization of assortments affects consumers' purchase behavior.

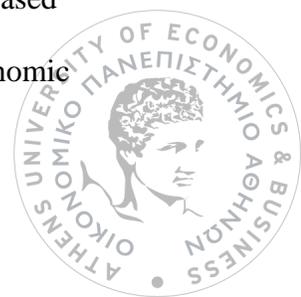
- ***RQ5:** What is the effects of the congruence between shopping mindset and assortment organization on consumer purchase behavior?*

Finally, while applied psychological research in the retailing and consumer behavior domain has empirically examined the role of processing fluency in consumer responses, such as judgments about brand evaluation (Lee and Labroo 2004), expensiveness (Janiszewski and Meyvis 2001), price discounts (Thomas and Morwitz 2009), and confidence (Ülkümen, Thomas, and Morwitz 2008), research on the effect of processing fluency on actual consumer behavior remains limited (Koriat, Ma'ayan, and Nussinson 2006). In particular, no prior research addresses if and how the congruence between consumers' shopping goals and the organization of assortments influences the subjective feeling of ease with which people process the shopping environment and the purchase behavioral consequences of this (in)congruence.

- ***RQ5:** What is the effects of the congruence between shopping mindset and assortment organization on processing fluency?*

1.4 Expected Contribution and Dissertation Outline

This doctoral dissertation begins by explaining the need for a construct such as shopping mission. It conceptually develops shopping mission by reviewing its connection to the goals and mindsets of shoppers, as suggested in pertinent literature. It further defines the mission-based assortment organization, discusses its essential properties, and compares it with the taxonomic



organization. It continues by developing an argumentation on how the congruence between assortment organization and shopping mindset affects consumer purchase behavior. In particular, it suggests whether and when the mission-based assortment organization performs better than the commonly used taxonomic organization in terms of in-store purchase behavior metrics, such as unplanned purchases and basket size. Drawing from mindset theory of action phases (Gollwitzer, Heckhausen, and Steller 1990), it suggests that the effect of assortment organization on purchase behavior is contingent on the mindset under which a consumer enters a store. Furthermore, building on the literature on metacognitive experience (Garbarino and Edell 1997; Janiszewski and Meyvis 2001; Schwarz 2004a), a mechanism is identified in which the fit between the consumer shopping mindset and the store assortment organization leads to higher processing fluency (i.e., a subjective feeling of ease); in turn, it is shown that processing fluency is a mediating variable that explains consumers' unplanned purchase behavior.

This dissertation suggests a method for the identification of shopping missions grounded in the inherent tendencies of the product categories to be consumed and, more important, purchased together. In the exploratory part of this dissertation, an effective analytical method is recommended for the identification of shopping missions by clustering product categories found in grocery sales data and demonstrates its utility with a data set comprised of 4 million baskets from six stores of different formats in a multinational supermarket chain. This doctoral dissertation posits that shopping missions yield significant insights on shopper purchasing behavior that can form the basis for shopper marketing actions driven by personalization, customization, and efficiency.

Following the identification of shopping missions, and across two lab experiments using virtual store technology, this dissertation tests its assertions, after which it presents a field



experiment to test the research hypotheses in a real-world setting. Finally, it concludes with a discussion of the theoretical and managerial implications, limitations and suggestions for future research.

Therefore, Chapter 2 provides a review of the pertinent literature and helps identify theories that have previously been used to describe shopping missions and to assess their impact in the area of assortment organization. Chapter 3 delves deeper into the theoretical ideas presented into this dissertation and conceptually develops its research hypotheses and its general conceptual model. Chapter 4 discusses the research methodology followed in this dissertation along with some epistemological considerations. It further presents its overall research design and makes reference to particular methods of data collection and analysis employed in the subsequent empirical chapters. The empirical research of this doctoral dissertation is divided into exploratory and explanatory phases with Chapter 5 discussing the former and Chapter 6 discussing the latter. Chapter 5 presents a method of identifying shopping missions from point-of-sale (POS) data and a series of focus group discussions with consumers. Chapter 6 seeks to test a number of hypotheses and includes two laboratory experiments using virtual store technology and a field (quasi-) experiment. Chapter 7 concludes by providing a number of contributions to the theory and practice of shopper marketing, references to the limitations of this research, as well as avenues for future research.





CHAPTER 2 – LITERATURE REVIEW

The purpose of this chapter is three-fold: (1) to survey the current state of knowledge, (2) to identify key authors, articles, theories, and findings, and (3) to identify gaps in knowledge, all these with respect to shopping missions and their impact in the area of assortment organization. Aim of this chapter is to provide a judiciously comprehensive literature review, which is not restricted to a few publication outlets, a few years, or a specific methodology. This chapter also provides some intuitions on the conceptual definition of shopping mission and helps identify theories that have previously been used to assess its impact in the area of assortment organization.

2.1 Purposive Behavior of Consumers and Shopping Goals

Goals play an essential role in the purposive behavior of individuals, and psychologists have praised their importance and have investigated how these emerge, influence decision making, and guide choice and action (Moskowitz and Heidi 2009). Goals are desired results that a person envisions, plans and commits to achieve, that is, goals are personal end-points in some sort of assumed development. Motivational theories of social psychology suggest that goals provide individuals with a sense of direction and clarity for their actions, influencing the way they think and behave (Kruglanski et al. 2002; Locke and Latham 1990). Goals also are a fundamental organizing block for human memory; they provide a central organizing structure (Barsalou 1991) that helps people access the vast amount of cognitive and affective information stored in their memories. Activation of a goal makes certain schemas and their associated network links more accessible (Fiske and Taylor 2013).



Much of consumer behavior is goal-directed. This can be found in the marketing of durables (e.g., buying a computer for the purpose of managing finances), nondurables (e.g., searching for a detergent that will be gentle, easy to use, and effective), services (e.g., joining a health club to keep body weight under control), and ideas or persons (e.g., deciding to vote for a candidate who will promote the voter's personal welfare). Even buyers in organizations pursue specific goals in their activities, such as when hospital pharmacy and therapeutics committees search for, choose, and prescribe drugs that will be safe, efficacious, and inexpensive. Thus, the topic of goals has a rich tradition in the consumer behavior and retailing literature. Marketing scholars and psychologists describe the effects of goals on behavior across various contexts, from health (e.g., Bagozzi and Edwards 1998) to shopping-related concerns (Baker et al. 2002; Puccinelli et al. 2009). Goals may drive an individual consumer's shopping process, including which store he or she chooses, as well as the decision process used in the store. Therefore, the same consumer may behave differently in distinct shopping environments or even in the same environment, because of how the environment facilitates or inhibits his or her progression toward a particular goal. For consumers with a hedonic or entertainment goal, a stimulating environment feels engaging and arousing, contrarily, for consumers with a specific goal (e.g., grabbing a pair of socks for trekking), the store instead may seem overwhelming and distracting (Kaltcheva and Weitz 2006).

In a review of buying processes in retail environments, Puccinelli et al. (2009) explain that goals serve to focus attention on the retail environment and exclude other, irrelevant information. Specifically, they mention that goals affect the need recognition, information search, evaluation, purchase, and post-purchase stages. For example, Morales et al. (2005) find that in familiar product categories, greater congruence between shopping goals and the store's



external layout produces higher perceptions of variety and satisfaction with product choices, whereas in unfamiliar categories, congruence decreases perceptions of variety but increases satisfaction. According to Lee and Ariely (2006), goal-evoking promotions are more effective in influencing consumers' behavior when goals are less concrete, such as early in the shopping process.

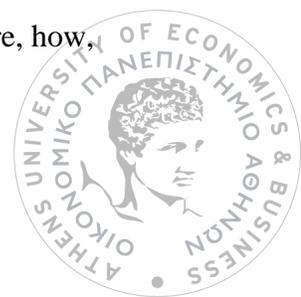
The distinction between abstract and concrete shopping goals (Lee and Ariely 2006), suggests that goals are established before the shopper enters the store and expressed as different shopping trip types (Bell, Corsten, and Knox 2011). Shopping trip goals range from very precise and concrete, such as visiting the store for a specific promotion (Mulhern and Padgett 1995; Walters and Jamil 2003); to concrete, such as purchasing products for immediate consumption or for meals of the same day (Bell, Corsten, and Knox 2011); to relatively abstract fill-in trips aimed at a general replenishment of frequently consumed perishables; to more abstract and less frequent major trips aimed at obtaining a large number of miscellaneous items (Block and Morwitz 1999; Kollat and Willett 1967). The different shopping trip goals and levels of abstractness influence important consumer attitudinal and behavioral outcomes, such as perceived similarity among alternatives (Lamberton and Diehl 2013), persuasion effectiveness (Nenkov 2012), promotion effectiveness (Walters and Jamil 2003), and unplanned buying (Bell, Corsten, and Knox 2011). Adopting a cognitive approach to motivation, goal systems theory (Kruglanski et al. 2002) suggests that the activation of a goal also activates the cognitive procedures associated with the accomplishment of the goal. Thus, the psychological processes associated with either the goal-setting or goal-striving phase of goal-directed decision making and goal pursuit in the buying process (Bagozzi and Dholakia 1999) activate different cognitive procedures while shopping.



2.2 Goal Setting and Goal Striving in Consumer Research

Psychologists and consumer researchers acknowledge that the formation of goal concepts and the enactment of purposive action in relation to goals take place complexly and at various stages in decision making and behavior (Bagozzi and Dholakia 1999). Multiple mental activities and actions occur en route to goal achievement and a distinction between goal setting and goal striving is pertinent (Oettingen and Gollwitzer 2001). In their organizing framework, Bagozzi and Dholakia (1999) suggest that goal-directed consumer behavior can be conceived as beginning with goal setting and continuing with goal striving. Goal setting involves decision making processes in which, figuratively, the consumer addresses two broad questions: "What are the goals I can pursue, and why do I want or not want to pursue them?" Subsequently, and after a goal has been chosen and a goal intention formed, the next task that the consumer faces is the problem of how to reach the goal.

The amount of effort and time involved in the decision-making process, that is, the distinction between habitual decision-making, limited problem-solving, and extended problem solving (Solomon et al. 2006), influence the heuristic approach of reaching the goal. For instance, for a goal that has been pursued frequently in the past, a decision maker might activate a stored rule such as "use the means that I used last time." While for a chosen goal that is low in salience or simple to achieve, the person might apply a stored rule such as "use the easiest means" or "use the means that comes to mind first." However, for new goals or goals that are high in salience or difficult to achieve, the next step in the goal attainment process is the evaluation of alternative means to determine the best course of action. After an intention to seek a goal is formed and a decision to use a particular means is made, the means appraisal processes culminate in the formation of an implementation plan of action that specifies when, where, how,

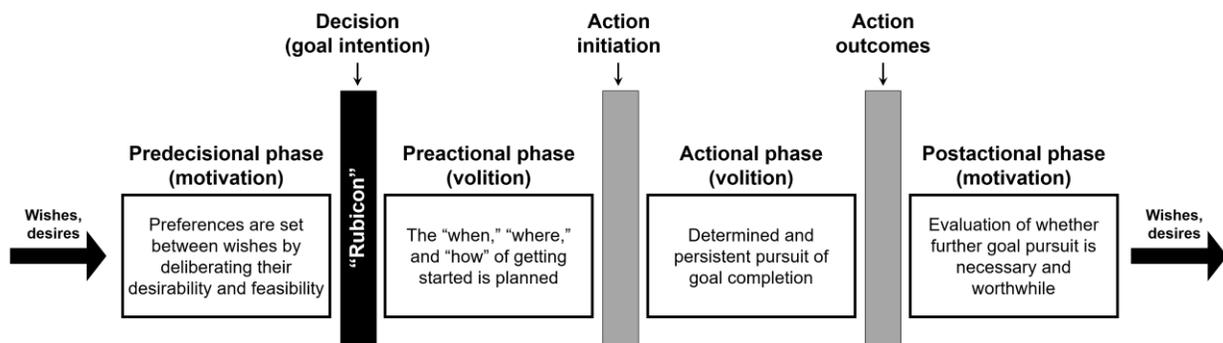


and how long each of the actions necessary for goal attainment will be carried out (Kruglanski et al. 2002). In a retailing context, goal striving may be exemplified in the process of brand choice, when the consumer has decided to make a purchase from a product category, while goal setting pertains to the motivation to make a purchase from the focal category in the first place.

2.3 Mindset Theory of Action Phases

The conceptual ground upon which the setting and striving of consumption goals is founded is the distinction between motivation and volition as proposed by the Rubicon model of action phases (Heckhausen and Gollwitzer 1987). The Rubicon model defines clear boundaries between the motivational and the volitional goal attainment phases and claims that prior to crossing the Rubicon (i.e., a metaphor for making a goal decision, where the idiom "crossing the Rubicon" means to pass a point of no return, and refers to Julius Caesar's army's crossing of the Rubicon River in 49 BC) motivational principles apply whereas thereafter volitional principles set in. The latter are concerned with implementation, or striving, of goals whereas the former relate to the choosing, or setting, of goals.

Figure 2: The Rubicon Model of Action Phases



Adapted from Gollwitzer (1996)



Within the Rubicon model, the course of action can be segmented into four different, consecutive phases that differ in terms of the tasks that are to be solved by the individual given that he or she wants to execute a given course of action successfully. Figure 2 illustrates the four phases of the Rubicon model (Gollwitzer 1996). The first phase (predecisional phase) is said to pose the task of setting preferences among wishes and desires by deliberating their desirability and feasibility. As people's motives and needs produce more wishes and desires than can possibly be realized, the individual is forced to choose among these desires and by doing so turn them into goals. Once goals are set (i.e., the Rubicon has been crossed), the individual faces the second task (preactional phase), which is getting started with goal-directed behaviors. This may be simple if the necessary goal-directed actions are well practiced and routine but complex if the individual is still undecided about where, when, and how to act. In such complex cases, the execution of goal-directed action has to be planned by deciding on when, where, and how to act. The third task (actional phase) is bringing the initiated goal-directed action to a successful ending, and this is best achieved by determined and persistent pursuit of goal completion. Finally, in the fourth task (postactional phase), the individual needs to decide whether the desired goal has indeed been achieved or whether further striving is needed.

The mindset theory of action phases (Gollwitzer, Heckhausen, and Steller 1990; Gollwitzer 1990, 2012) postulates that a person's psychological functioning in each of these phases is governed by different principles. Classic theories of motivation (adhering to the restricted definition of motivation as determined by feasibility and desirability; Atkinson [1957]; Feather and Newton [1982]; Heckhausen [1977]) are said to be well suited to explicate the psychological processes and cognitive procedures associated with the predecisional and postactional phases, whereas theories of volition (i.e., theories on the self-regulation of goal



attainment; Mischel [1974]) are most appropriate to explaining the psychological processes and cognitive procedures that characterize the preactional and actional phases. The created *mindset* (i.e., the sum total of the activated cognitive procedures) is the cognitive orientation most conducive to the successful task performance of each phase and pertains to what type of information is preferably processed and how it is analyzed.

Deliberating between potential action goals activates cognitive procedures, that is, the *deliberative mindset*, that facilitate the task of the predecisional phase, which is to set preferences. As undecided individuals do not know yet in which direction their decisions will finally take them, a heightened receptiveness to all kinds of information (open-mindedness) seems appropriate and functional to task solution. Similarly, planning out the implementation of a chosen goal should activate cognitive procedures, that is, the *implemental mindset*, that facilitate the task of the preactional phase (i.e., getting started on the chosen goal). As this requires a more focused and selective orientation to processing information, closed-mindedness rather than open-mindedness with respect to available information seems called for.

Applied researchers in the consumer behavior and retailing substantive domains have explored the conceptual usefulness of a distinction between deliberative and implemental mindsets to explain in-store behavior. Prior studies suggest that the point of the shopping course (i.e., upon store entrance vs. when browsing through the store's interior) influences the mindsets of shoppers (Dhar, Huber, and Khan 2007; Lee and Ariely 2006), but so do preshopping factors, such as consumers' chronic shopping orientation (Büttner, Florack, and Göritz 2013). However, there is no research to date to argue that shopping mindset is a physiological process contingent on the overall shopping trip goal assumed by the shopper prior to entering the store. Moreover, the conceptual relationship of shopping goal, mindset, and mission needs to be scrutinized.



2.4 Merchandise Presentation and Assortment Organization

The environment, design, presentation, and location of merchandise in a retail store have a significant impact on shopping behavior. Major elements in the design of retail stores involve decisions with respect to the store's layout, atmospherics, signage, feature areas and space management (Levy and Weitz 2012; Vrechopoulos et al. 2004) Space management involves mostly two sets decisions, that is, the allocation of store space to merchandise categories and brands, that is, *shelf space management*, and the location of departments or merchandise categories in the store, that is, *floor space management*. While there has been a significant stream of research with respect to the former set of decisions (e.g., Drèze, Hoch, and Purk [1995]; Eisend [2014]; Murray, Talukdar, and Gosavi [2010]), the latter set of decisions have been largely overlooked in consumer behavior and retailing literature. Bezawada et al. (2009) suggest that aisle and display placements have significant and sizable asymmetric effects on cross-category sales affinities, effects comparable to those influenced by marketing-mix variables, such as price and promotion. Lam and Mukherjee (2005) argue that coordinating and juxtaposing merchandise aids shoppers in their quest to find, compare, and select merchandise suited for their needs. Floor space management, furthermore, relates to the absolute and relevant placement of product categories in stores. Absolute placement refers to where the product categories are placed with respect to the store entrance, that is, the order of presentation to the shoppers while in their shopping trajectory, while relative placement relates to how different product categories are placed with respect to each other, that is, the adjoining of product categories into some sort of coherent groupings (Lewison 1997).

Closely related to both the shelf and the floor space management of retail stores, are decisions pertaining to the organization of assortments, that is, the structure in which choice



options are presented to consumers (Chernev 2011). Given both the allocation of shelf and floor space to the various merchandise elements (i.e., categories and brands), assortment organization research examines how these are grouped and presented to consumers. Previous studies suggest that the organization of the available options can facilitate (or hinder) choice by reducing (or increasing) the cognitive costs associated with the decision process (Chernev 2003; Kahn and Wansink 2004; Morales et al. 2005). At the category level—that is, the presentation of different items within a merchandise category—assortment organization can influence perceived variety (Kahn and Wansink 2004), similarity perceptions, and strength of preference (Lamberton and Diehl 2013). Assortment organization research at the cross-category level, however, is limited on the effects on store choice (Diehl, Herpen, and Lamberton 2015). Diehl, Herpen, and Lamberton (2015) examine how organizing a choice set by either substitutes or complements affects consumers' store preferences.

Prior research suggests that there are two common approaches to organizing options within an assortment, that is, taxonomic and goal-derived (Chernev 2011). Taxonomic organization involves arranging products based on their inherent characteristics, such as category, manufacturer, size, or type. For example, taxonomic organization calls for displaying all brands of cereal together, in subgroups by types of cereal and/or the manufacturer. Goal-derived organization, on the other hand, groups options according to the underlying consumer goal they serve. For example, goal-derived categorization calls for combining cereal with complementary products such as milk and displaying the two products together. However, while the conceptualization and operationalization of taxonomic organizations is relatively straightforward, this is not always the case with goal-derived or complements-based assortment organizations. Product complementarity is contingent on the shopping goal, which renders the



development of precise complementary sets or consumption constellations (Englis and Solomon 1996) cumbersome and often self-conflicting. For example, while biscuits, coffee, and milk can be grouped together to highlight a “coffee break” assortment organization, milk can be associated more subtly with a “breakfast” and biscuits with a “snack” shopping mission. A valid development of a complements-based organization requires pre-specifying shopper goals and should take into account the conceptual relationships among shopping goals, mindsets, and missions. Furthermore, it is not clear how the congruence between shopping mission instantiations of shopping goals and the organization of assortments affects consumers’ metacognitive experience and subsequent shopping behavior.

2.5 Metacognition and Processing Fluency

Metacognition involves the awareness of, or knowledge about, one’s own thought processes and knowledge. Flavell (1976, 1979) defines metacognition as knowledge about cognition and control of cognition. For example, I am engaging in metacognition if I notice that I am having more trouble learning A than B; [or] if it strikes me that I should double check C before accepting it as fact. Flavell (1976, p.232). Metacognition allows conscious changes in mental strategy toward solving problems, performing tasks, and understanding new things (Matsumoto 2009). Together with other complex psychological processes, such as programming behavior, behavioral re-orientation, and self-awareness, metacognition involves controlling and regulating cognition and is considered one of the executive functions of the brain (Alvarez and Emory 2006). An important concept in developmental psychology and cognitive development theory, metacognition is classified into three components (Flavell 1979), that is, metacognitive *knowledge*—also called metacognitive awareness—which is what individuals know about



themselves and others as cognitive processors, metacognitive regulation, which is the *regulation* of cognition and learning experiences through a set of activities that help people control their learning, and metacognitive *experiences*, which are those experiences that have something to do with the current, on-going cognitive endeavor.

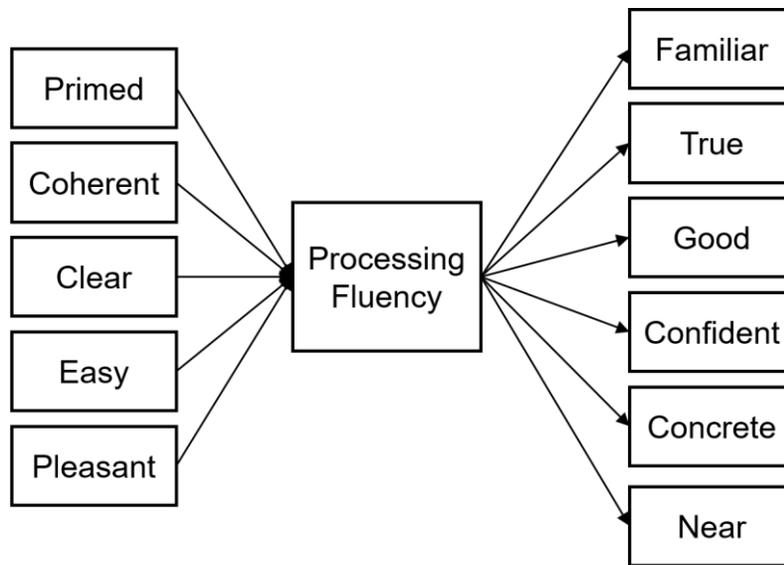
Literature on metacognition suggests that human judgment reflects not only the content of our thoughts but also the metacognitive experience of processing those thoughts (Alter and Oppenheimer 2009; Schwarz 2004a; b). Human reasoning is accompanied by metacognitive experiences, most notably the ease or difficulty of recall and thought generation and the fluency with which new information can be processed. These experiences are informative in their own right. They can serve as a basis of judgment in addition to, or at the expense of, declarative information (i.e., information that one can speak about, such as knowing the capital of a state, in contrast to procedural information, such as knowing how to ride a bike) and can qualify the conclusions drawn from recalled content (Alter and Oppenheimer 2009). *Processing fluency*, or the subjective experience of ease with which people process information, is one such metacognitive cue that plays an important role in human judgment. Processing fluency refers to the metacognitive experience surrounding the ease of performing a cognitive activity, whether it is the generation of a perception (i.e., perceptual fluency), the retrieval of information from memory (i.e., retrieval fluency), or the assignment of meaning to an event (i.e., conceptual fluency) (Benjamin, Bjork, and Schwartz 1998; Rajaram and Geraci 2000; Reber and Schwarz 1999). When a cognitive activity is more fluent than expected, people make attributions about the reasons for this fluency (Bornstein and D'Agostino 1994; Whittlesea and Williams 2000).

Recent research has identified several distinct factors that converge on a single dimension of fluency, which, in turn, has multiple consequences. The interchangeability of the determinants



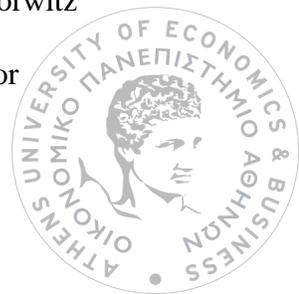
of fluency is the most intriguing aspect of these findings: the quality of the font in which a problem is presented, the complexity of the language, a good or bad mood, and the presence or absence of contextual support and priming – all appear to have similar effects on judgments of familiarity, truth and goodness (Alter and Oppenheimer 2009; Reber and Schwarz 1999) beauty (Schwarz 2006), and effort and risk (Song and Schwarz 2008). The deliberate exertion of effort induces a subjective experience of strain, and low fluency—regardless of its source—engages effortful processing. As Figure 3 illustrates, fluency is an input to many judgments (Morewedge and Kahneman 2010).

Figure 3: Causes and Judgmental Consequences of Processing Fluency



Morewedge and Kahneman (2010)

Applied psychological research in the retailing and consumer behavior domain has empirically examined the role of processing fluency in consumer responses, such as judgments about brand evaluation (Lee and Labroo 2004), expensiveness (Janiszewski and Meyvis 2001), price discounts (Thomas and Morwitz 2009), and confidence (Ülkümen, Thomas, and Morwitz 2008). However, research on the effect of processing fluency on actual consumer behavior



remains limited (Koriat, Ma'ayan, and Nussinson 2006). For example, Labroo, Dhar, and Schwarz (2008) show that when participants were confronted with the task of choosing between two bottles of wine, they were more likely to select the bottle that was more perceptually fluent due to a semantic priming procedure experienced before choice. Novemsky et al. (2007) find that fluency experiences extraneous to the content of the choice options can influence choice. Herrmann et al. (2013) suggest that consumers spend more money in the presence of a simple ambient scent than in the presence of a complex scent or when no scent is present, an effect that they attribute to enhanced processing fluency of visually less complex environments. Moreover, while previous research suggests that when encountering information that is consistent with their mental frames, individuals are likely to experience a feeling of fluency or ease of comprehension, generating a “feels right” experience (Reber, Schwarz, and Winkielman 2004), and a feeling that something “just fits” by feeling genuine and desirable (Lee and Labroo 2004), no prior research addresses if and how the congruence between consumers’ shopping goals and the organization of assortments influences the subjective feeling of ease with which people process the shopping environment and the purchase behavioral consequences of this (in)congruence.





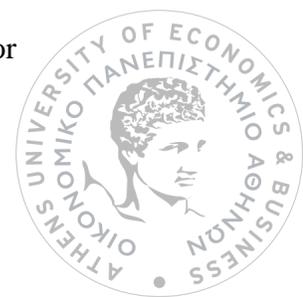
CHAPTER 3 – CONCEPTUAL DEVELOPMENT

In this chapter, the general conceptual framework that is used to make conceptual distinctions and organize ideas within this dissertation is presented. The proposed general conceptual model emerged as the result of the literature review as well as from the conceptual refinement at each empirical phase of this research.

3.1 Shopping Mission and its Conceptual Relationship with Goal and Mindset

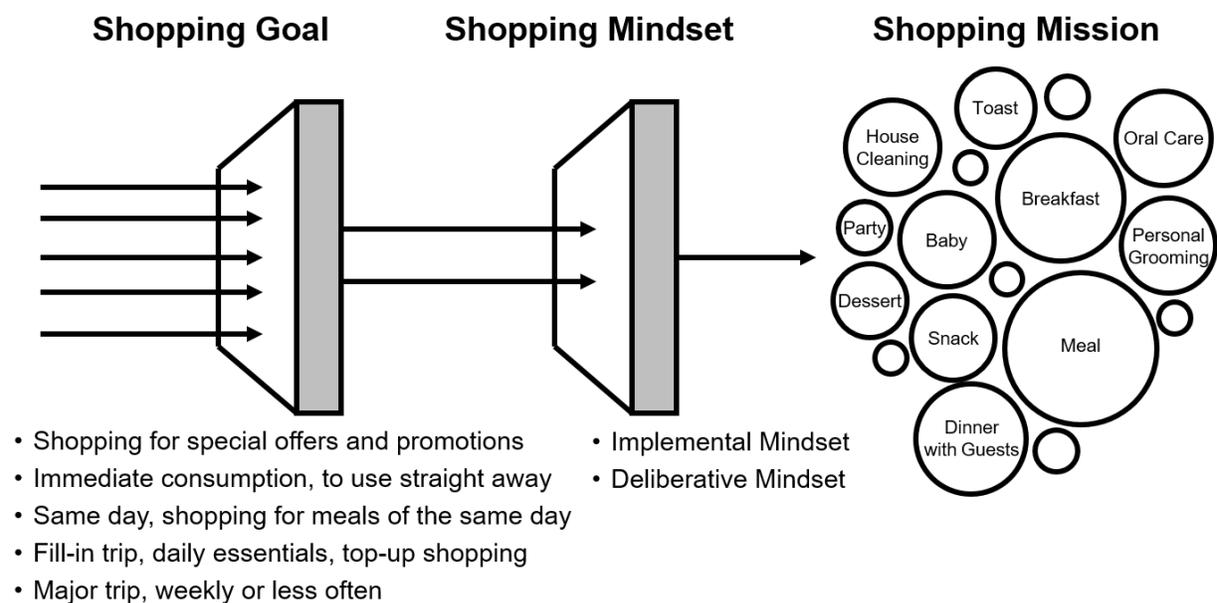
Shoppers acknowledge the product-related reasons for a store visit by making explicit references to their intended purchases as distinct product entities, often summarized at the product category level in a shopping list for reference and guidance. This tactic is particularly common for shopping trips under an implemental shopping mindset, in which shoppers explicitly acknowledge their purchases prior to entering the store. In contrast, shoppers under deliberative mindsets construe their purchases implicitly and make their category choices in the store.

Product categories appear as merchandise organizational units, containing competing product brands, and also can serve the purpose of describing shopping objectives of trips under an implemental shopping mindset. However, a higher-order, cross-category merchandise construct for competing product categories is necessary to designate the shopping objectives of trips under a deliberative shopping mindset. Prior research stresses the importance of higher-order, goal-based interrelationships among products spanning merchandise categories in areas such as marketing communications (Englis and Solomon 1996) and consumption stereotypes (Chaplin and Lowrey 2010). In contrast with previously proposed constructs—such as transaction size in value (Kollat and Willett 1967), number of items purchased (Bell and Lattin 1998), use or



absence of shopping list, overall shopping trip, and store specific goals (Bell, Corsten, and Knox 2011)—that distinguish shopping trips on the basis of non-product dimensions, *shopping mission*—conceptualized as an instantiation of or value assigned to the deliberative shopping mindset—is a product-related categorization of shopping trips that involves the specific need states of shoppers entering stores. Figure 4 presents the conceptual relationship of shopping goal, mindset, and mission.

Figure 4: The Conceptual Relationship of Shopping Goal, Mindset, and Mission



Very concrete shopping trips, such as the purchase of special offers, are particularly prone to implemental mindsets and involve a limited number of items, commonly confined within a single product category. The more focused and selective orientation of an implemental mindset better describes the cognitive and behavioral procedures of shoppers in trips aimed at a handful of categories, such as for special offers (Mulhern and Padgett 1995) or “cherry-picking” (Talukdar, Gauri, and Grewal 2010). The underlying consumption need in this case is typically self-evident, in that it relates to the purchased category’s role, particularly for destination

categories. Similarly, an implemental mindset is predominant in shopping tasks concerning preplanned fill-in and major trips, which involve a large assortment of items in heterogeneous product categories that address a host of miscellaneous needs. Shoppers engaged in abstract shopping trips seek to make the majority of their product category decisions as early as possible in the shopping process (e.g., before entering the store). Abstract shopping trips require more time and effort by the shopper, who plans to purchase a large number of items and categories. Seeking to minimize the time spent shopping and safeguard against unplanned purchases or budget deviations, shoppers in major and fill-in trips often use external memory aids, such as shopping lists that help shoppers implement a large shopping task. In this case, shopping missions are thus hard to identify, due to the incongruent and nested relationships among the multitude of product categories involved.

On the other hand, when undertaking relatively concrete shopping trips, targeted at short-term consumption occasions or special events, shoppers are aware of the explicit and discrete need(s) they seek to meet (e.g., quick lunch solution, tonight's dinner with guest), construe the products to satisfy their needs tacitly, and deliberate among alternative product solutions (e.g., between pasta salad and pizza for lunch, between white and red wine to complement tonight's dinner) while shopping. Deliberating among alternatives activates cognitive procedures that facilitate preference setting. Shoppers in relatively concrete shopping trips, not knowing yet in which direction their product decisions will take them, seek stimulation in the store, such as by browsing around or discovering and evaluating new products. Therefore, their information processing should be tuned toward deliberating about the pros and cons of products and thinking about wishes and desires. These consumers likely shop with a deliberative mindset. Thus, the relative concreteness and the deliberative mindset it brings about make trips involving a balanced



number of product categories, such as for purchasing products for immediate or same-day consumption, particularly applicable to the identification of shopping missions. The inherent relationships, in the form of sales affinities and logical complementarities, among the relatively small number of product categories involved explicitly reflect the need states they seek to meet. Table 1 summarizes the key features of different types of shopping goals and how they relate to the identification of shopping missions.

Table 1: Conceptual Matrix of the Identification of Shopping Missions Contingent upon Abstractness and Mindsets of Shopping Goals

Exemplar Shopping Goals	Abstractness	Predominant Mindset	Authors	Underlying Need State(s)	Identification of Shopping Mission(s)
Shopping for special offers and promotions	Very concrete	Implemental	Mulhern and Padgett (1995); Walters and Jamil (2003); Bell, Corsten, and Knox (2011)	Self-evident, related to the (single) product category(-ies) involved	Yes, in case destination category(-ies) involved
Immediate consumption, to use straight away Same day, shopping for meals of the same day	Relatively concrete	Deliberative	Bell, Corsten, and Knox (2011)	Explicit/ distinct	Yes, due to the inherent relationships (sales affinity, logical complementarity) of the small number of product categories involved
Fill-in trip, daily essentials, top-up shopping Major trip, weekly or less often	Relatively abstract Very abstract	Implemental	Kollat and Willett (1967); Mulhern and Padgett (1995); Block and Morwitz (1999); Walters and Jamil (2003); Bell, Corsten, and Knox (2011)	Several/ diverse	Hard, due to the incongruent and nested relationships among the large number of product categories involved



3.2 Congruence between Shopping Mindset and Assortment

Organization

The notion of shopping mission, which is used to connect the different goals associated with shopping and product categories, and denotes the specific goal(s) the consumer has in mind when entering a store. In this dissertation, we make use of the concept of shopping mission to derive assortment organizations that organize product categories according to the mission they serve and then compare the interplay of taxonomic and mission-based assortment organizations with the deliberative and implemental shopping mindsets. We acknowledge that both can sometimes coexist in a store or on a website—for example, some retailers only partially use a mission-based assortment organization (e.g., in promotional displays and fixtures, such as meal deals); however, the objective of this research is to scrutinize the mere effect of the different organizations. Figure 5 illustrates two examples of mission-based assortment organizations. Panel A shows a “takeaway meal deal” across main dishes, rice, and side dishes, with bottled beer merchandised above. Panel B illustrates a “picnic” organization that includes salads, olives, and cooked meats, with a promotion linking the mission to wine.

Figure 5: In-Store Examples of Mission-Based Assortment Organizations



Prior research suggests that the fit between two factors induces a subjective experience of engagement or fluency (Kidwell, Farmer, and Hardesty 2013; Schwarz and Clore 1983; Wadhwa and Zhang 2015). Increased engagement from such fit induces a sense of feeling right (Cesario, Grant, and Higgins 2004; Higgins 2006; Lee, Keller, and Sternthal 2010). Prior research has discussed instances of congruence between assortment organization and consumers' internal organization schemes (Morales et al. 2005), shopping objectives (Lamberton and Diehl 2013), and hedonic focus (Diehl, Herpen, and Lamberton 2015). Therefore, we suggest that the fit between retailers' externally imposed assortment organization and consumers' internally induced shopping mindset will result in instances of congruence and a subjective experience of ease, which in turn will affect unplanned shopping behavior.

As mission-based assortment organizations bring together complementary products to satisfy distinct consumption goals, we anticipate that they will facilitate the shopping process for consumers under a deliberative shopping mindset. The cognitive process of in-store deliberating between the pros and cons of alternative product choices will be facilitated if differences between different goal solutions are highlighted (Chernev 2003; Garbarino and Edell 1997). Therefore, we expect a mission-based assortment organization to be more congruent for consumers under a deliberative shopping mindset. Conversely, we expect the organization of products based on their inherent characteristics to facilitate search and in-store navigation for consumers who have explicitly decided which products to buy before entering the store (Mogilner, Rudnick, and Iyengar 2008). Therefore, we posit that a mission-based assortment organization will impede the shopping process for consumers under an implemental mindset.

In deliberating between alternative products to satisfy their implicitly construed shopping goals, consumers under a deliberative mindset will benefit from the complementarity between



products as highlighted by a mission-based assortment organization (Englis and Solomon 1996; Voss, Godfrey, and Seiders 2010). For example, when considering which products to purchase for a dinner with a guest, a consumer is more likely to buy wine to complement the meal if the assortment organization combines beef with complementary products, such as red wine. Conversely, when the consumer is under an implemental mindset and thus is explicitly considering the purchase of wine, a taxonomic organization that groups wines by type (e.g., red, white, sparkling) will highlight differences among the wine products, thus facilitating his or her decision.

In line with the conceptual distinction between unplanned and impulse purchase behavior (Rook 1987), we conceptualize unplanned purchase as a behavioral consequence of this subjective feeling of ease (Novemsky et al. 2007) and argue that this feeling, which is induced by the congruence between assortment organization and shopping mindset, will affect consumers such that they will make more purchases that, though not planned, are relevant to their shopping goals (Bagozzi et al. 2000). Prior research has also established a positive relationship between unplanned purchases and basket size (Bell, Corsten, and Knox 2011; Bell and Lattin 1998; Desai and Talukdar 2003; Granbois 1968; Kollat and Willett 1967; Park, Iyer, and Smith 1989; Walters and Jamil 2003). Therefore, we expect that the congruence between assortment organization and shopping mindset will lead to more unplanned purchases and a larger basket size. More formally:

H₁: Mission-based (taxonomic) assortment organization leads to greater unplanned purchases for consumers who enter the store under a deliberative (implemental) mindset.

H₂: Mission-based (taxonomic) assortment organization leads to a larger basket size for consumers who enter the store under a deliberative (implemental) mindset.



3.3 Objective Operationalization of Processing Fluency and Purchase Rate

Processing fluency as, a subjective experience of ease, accompanies every perceptual act and is felt at the periphery of conscious awareness. This feeling, therefore, may not be the focus of a person's attention and is not always reflected in the conscious experience (Winkielman et al. 2003). Therefore, although processing fluency is often defined as a subjective experience, it is often operationalized in terms of objective fluency, which is assumed to reflect experienced feelings (Herrmann et al. 2013). Objective fluency refers to the dimension of speed, resource demands, and accuracy of mental processes (Reber, Wurtz, and Zimmermann 2004). High objective fluency involves high speed, low resource demands, high accuracy, or other indicators of efficient processing, without necessarily assuming that these processes are reflected on a subjective level (though often do [Herrmann et al. 2013]). Purchase rate, or the number of items (e.g., products or categories) purchased per unit of time (e.g., seconds or minutes), incorporates the objective dimension of speed of processing fluency. The duration of a shopping task, is highly correlated to the number of items, or basket size (overall shopping trip abstractness [Bell, Corsten, and Knox 2011]). Thus, by a ratio, i.e., the purchase rate, one can capture objective measurements of processing fluency not only in case of changes in the duration of a shopping trip but also in case of changes in the duration of a shopping trip while the number of items purchased was held constant. Therefore, we expect that higher processing fluency experienced by consumers exposed to a mission-based (taxonomic) assortment organization under a deliberative (implemental) mindset will positively also affect purchase rates. Overall, we argue that the congruence between assortment organization and shopping mindset will have a positive impact on both the subjective experience of ease (processing fluency) and its downstream



behavioral consequence (purchase rate), which in turn will affect purchase behavior. More formally:

H₃: Both processing fluency and purchase rate mediate the effect of assortment organization and shopping mindset on purchase behavior, such that mission-based (taxonomic) assortment organization leads to higher processing fluency and purchase rate for consumers who enter the store under a deliberative (implemental) mindset.

3.4 Conceptual Model

Drawing on theories from psychology (social and cognitive) and marketing (retailing and consumer behavior), a conceptual model was developed. The term conceptual model is used interchangeably with that of nomological network in its classical sense as proposed by Cronbach and Meehl (1955). A conceptual model is, thus, defined as the interlocking system of hypotheses, principles, and laws linking the constructs that constitute any theory and encompasses the theoretical constructs being measured, how the concept is going to be measured, and the specification of the interrelationships between the theoretical and empirical planes. The purpose of the conceptual model is to clarify all parts of a theory, so a theory's laws of explanation and prediction can be exploited. Figure 5 illustrates the conceptual model of this doctoral research, which models the effects of the congruence between assortment organization and shopping mindset on a number of consumer behavioral variables, such as basket size, shopping duration and unplanned purchases. The constructs that compose the conceptual model fall under four general conceptual areas, that is, retail environment, situational factors, metacognitive experiences, and consumer purchase behavior. Conceptual definitions for all constructs are presented in Table 2.



Figure 6: Conceptual Model

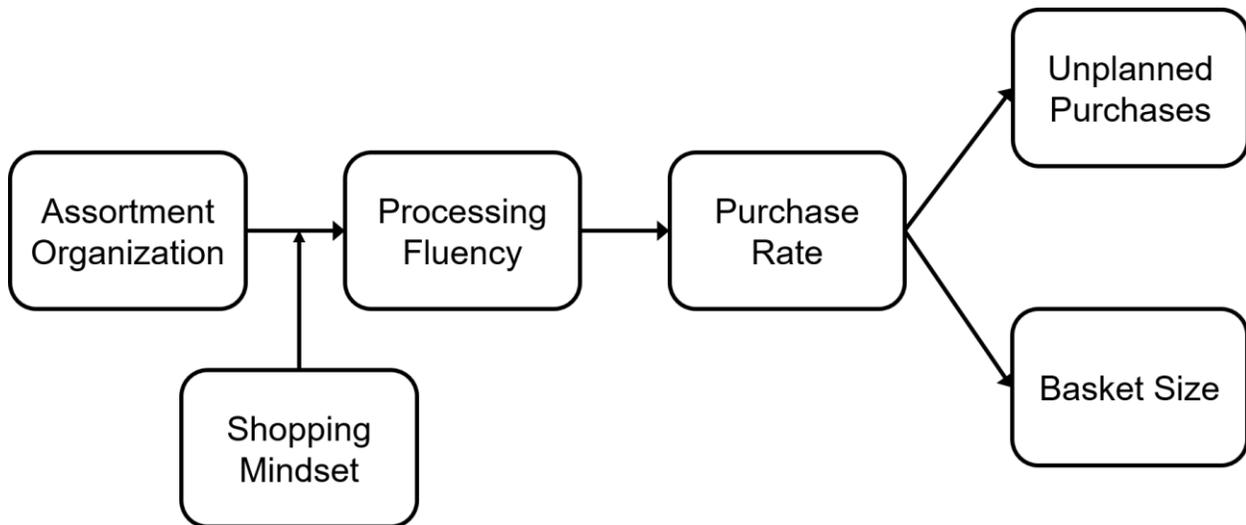


Table 2: Descriptions of the Conceptualization of Research Variables

Conceptual Area	Construct	Conceptual Definition	Author(s)
Retail Environment	Assortment Organization	The structure in which choice options (product categories at the store floor level) are presented to consumers	Chernev (2011)
Situational Factor	Shopping Mindset	The cognitive orientation most conducive to the successful performance of either deliberating or implementing on a shopping task	Sarantopoulos, Theotokis, and Pramatarı (2016)
Metacognitive Experience	Processing Fluency	The subjective experience of ease with which people process information	Schwarz (2004b)
Consumer Purchase Behavior	Purchase Rate	The number of items purchased in a shopping event per unit of time that the shopping event lasted	Sarantopoulos, Theotokis, and Pramatarı (2016)
	Unplanned Purchases	Purchases that were not specifically planned before the shopping event	Inman, Winer, and Ferraro (2009)
	Basket Size	The number of items purchased in a shopping event	Sarantopoulos, Theotokis, and Pramatarı (2016)



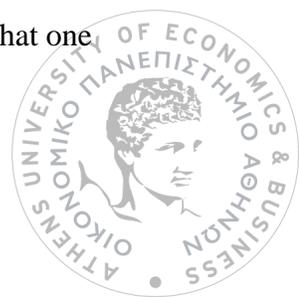
CHAPTER 4 – RESEARCH METHODOLOGY

Research methodology can be broadly defined as any plan for systematically investigating some phenomenon or behavior, which usually employs the scientific method (Matsumoto 2009).

Undoubtedly, there are numerous different ways of approaching any topic of interest, and the key is in selecting the one most likely to provide a clear answer to the question of interest. Broadly speaking, research methodology encompasses the study of research methods extending from broad issues relating to philosophical assumptions about the best way to study the world, through the theoretical principles underpinning particular methods, to specific procedures for conducting research (Myers 2010). Thus, designing a research study comprises three general framework elements, that is, the philosophical assumptions and theoretical perspectives about what constitutes knowledge, the general procedures of the research, and the detailed procedures of data collection, analysis, and reporting (Creswell 2014). This chapter discusses the philosophical perspectives and methodological principles of this doctoral dissertation.

4.1 Research Approach and Epistemological Considerations

The design and conduct of research is shaped by the mental models or frames of references that researchers use to organize reasoning and observations (Bhattacharjee 2012). These mental models, frames, or belief systems are called *paradigms* (Kuhn 1962). Two popular paradigms today among social science researchers are *positivism* and *post-positivism*. Positivism holds that science or knowledge creation should be restricted to what can be observed and measured and tends to rely exclusively on theories that can be directly tested. Frustrations with the strictly empirical nature of positivist philosophy (i.e., *empiricism*) led to the development of post-positivism (or *postmodernism*) during the mid-late 20th century. Post-positivism argues that one



can make reasonable inferences about a phenomenon by combining empirical observations with logical reasoning. Post-positivists view science as not certain but probabilistic (i.e., based on many contingencies), and often seek to explore these contingencies to understand social reality better. The post-positivist camp has further fragmented into *subjectivists*, who view the world as a subjective construction of our subjective minds rather than as an objective reality, and *critical realists*, who believe that there is an external reality that is independent of a person's thinking but we can never know such reality with any degree of certainty (Bhattacharjee 2012).

In their seminal work, Burrell and Morgan (1979) suggested that the way social science researchers view and study social phenomena is shaped by two fundamental sets of philosophical assumptions: *ontology* and *epistemology*. Ontology refers to our assumptions about how we see the world, e.g., does the world consist mostly of social order or constant change. In other words, ontology relates to the very essence of the phenomena under investigation. "Reality" is given "out there" in the world (objective), or the product of one's mind (individual cognition).

Epistemology refers to our assumptions about the best way to study the world, for example, should we use an objective or subjective approach to study social reality. Epistemology is the branch of philosophy that is concerned with the origins, nature, limits, and methods of human knowledge. This is a very important question in any science, which must have an acceptably logical set of reasons for its methods in order to be acceptable as a science (Matsumoto 2009).

If researchers view the world as consisting mostly of social order (ontology) and hence seek to study patterns of ordered events or behaviors, and believe that the best way to study such a world is using objective approach (epistemology) that is independent of the person conducting the observation or interpretation, such as by using standardized data collection tools like structured questionnaires, then they are adopting a paradigm of *functionalism*. However, if they



believe that the best way to study social order is through the subjective interpretation of participants involved, such as by interviewing different participants and reconciling differences among their responses using their own subjective perspectives, then they are employing an *interpretivism* paradigm (Burrell and Morgan 1979).

To date, the majority of social science research has emulated the natural sciences, and followed the functionalist paradigm. Functionalists believe that social order or patterns can be understood in terms of their functional components, and therefore attempt to break down a problem into small components and studying one or more components in detail using objectivist techniques such as surveys and experimental research (Bhattacharjee 2012). Functionalism (and positivism more broadly) is typically associated with *quantitative* research methods such as experiments and surveys, while interpretivism employs *qualitative* methods such as unstructured interviews and participant observation.

The purpose of this doctoral research is to develop and test a conceptual framework that models the effects of the congruence between assortment organization and shopping mindset on a number of consumer behavioral variables, such as basket size, shopping duration and unplanned purchases. This dissertation follows a functionalistic epistemological approach, while strives for methodological pluralism in the social sciences (Roth 1987) by following a *quantitatively-driven mixed method approach* (Johnson and Christensen 2012).

4.2 Research Design

The research design is the general plan, or blueprint of activities, set by the researcher that outlines how the researcher plans to satisfactorily answer the research question(s) identified (Bhattacharjee 2012; Creswell 2014; Gorard 2013). It specifies the research strategy with

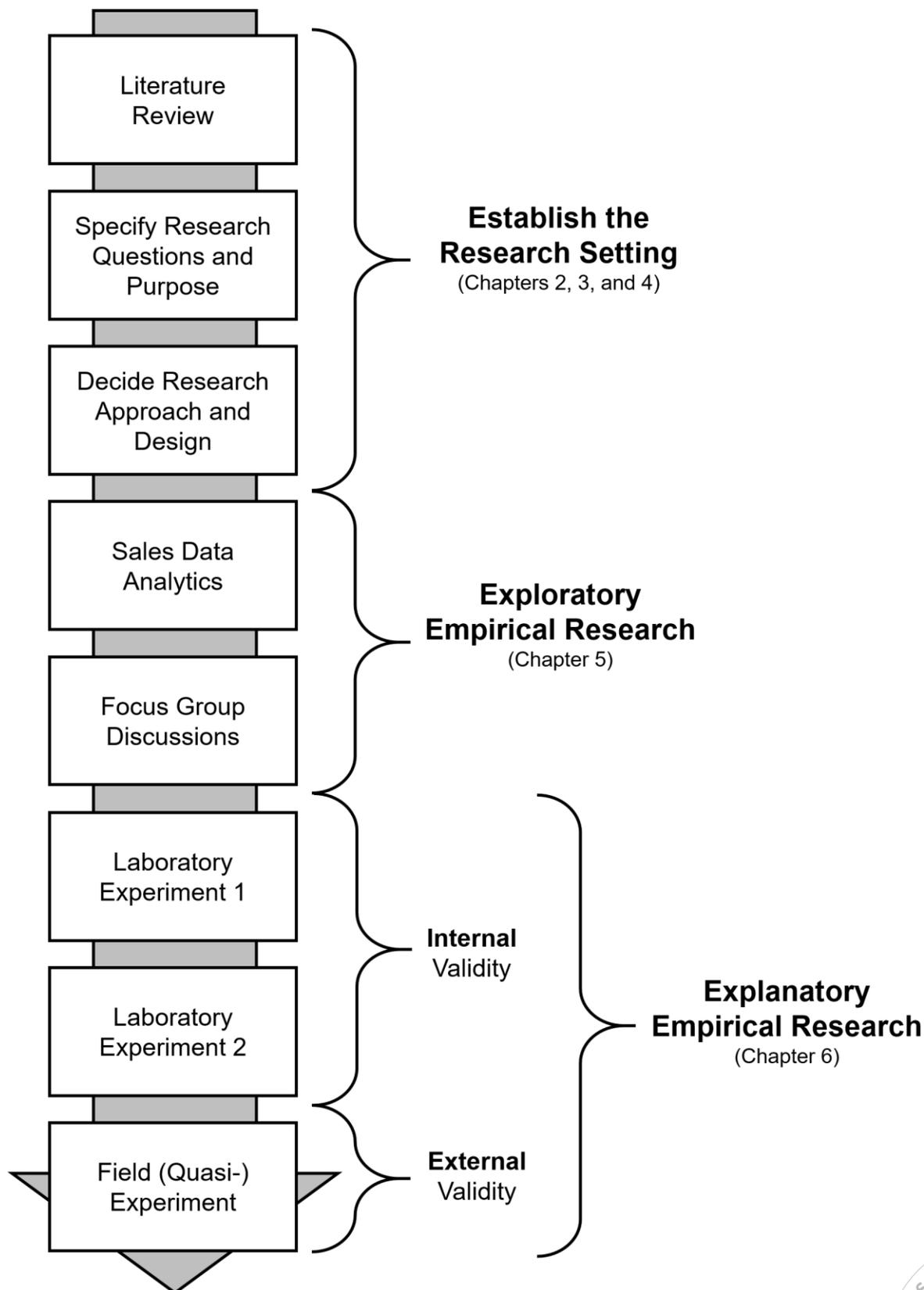


consideration of issues such as access of data, time, location, money, and research ethics (Malhotra and Birks 2006).

As shown in Figure 7, the initial step is to establish an overall *research setting* upon which this doctoral research will be based. The research setting involves a review of the pertinent literature, the specification of the questions and purpose of this research, and the decision with respect to the research approach and design. Having laid the foundations upon which this doctoral research will be grounded, *exploratory research* is then conducted to scope out the magnitude or extent of the shopping mission phenomenon, to generate some initial ideas about the implications of shopping missions in tandem with the organization of category assortments, and to test the feasibility of undertaking more extensive investigations regarding the effects of shopping missions, assortment organizations, and their interplay on consumer purchasing behavior. The exploratory research phase consists of an analytical method for the identification of shopping missions using point-of-sale (POS) data from six grocery stores and a set of eight focus group discussions with consumers. The outcome of this process is the identification of a number of predominant shopping missions emerging from the stores under consideration, the understanding and conceptual definition of shopping missions and their relationship with different shopping goals and mindsets, and finally, the development of a mission-based assortment organization to be examined empirically in the following phase. The subsequent *explanatory research* phase includes three experiments in which the nature of the relationship between the causal variables and the effect to be predicted are determined through hypotheses testing.



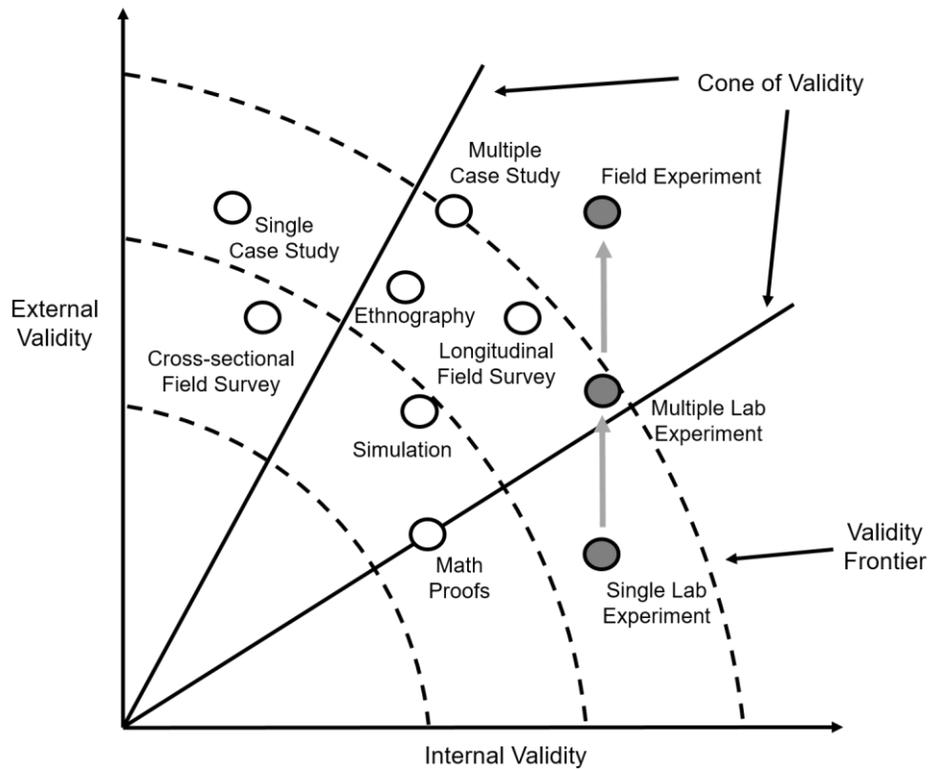
Figure 7: Overview of the Research Design



The explanatory phase of this doctoral research, intends to test cause-effect relationships (i.e., hypotheses) in a tightly controlled setting by separating the cause from the effect in time, administering the cause to one group of subjects (the treatment group) but not to another group (control group), and observing how the mean effects vary between subjects in these two groups. (i.e., comparing the factual vs. the counterfactual measurements). In *true experimental* designs, such as those of laboratory experiments 1 and 2, subjects are randomly selected (recruited) and assigned between each group. Experiment 3 is conducted in field a setting, that is, an actual supermarket store. In this study, there is neither random selection nor random assignment of participants, thus, the design is *quasi-experimental* (Shadish, Cook, and Campbell 2002). Inferences drawn from laboratory experiments tend to be stronger in *internal validity* (or causality), but those from field experiments tend to be stronger in *external validity* (generalizability) (Bhattacharjee 2012). The primary strength of the experimental design is its strong internal validity due to its ability to isolate, control, and intensively examine a small number of variables. Thus, the explanatory phase of this doctoral research follows an initial combination of multiple laboratory experiments and a seeks to establish the external validity of findings through a field (quasi-experiment). Figure 8 (adapted from [Bhattacharjee 2012]) shows the variation in internal and external validity for a wide range of research designs and presents the research design choices of this doctoral dissertation.



Figure 8: The Cone of Validity and Research Design Choices

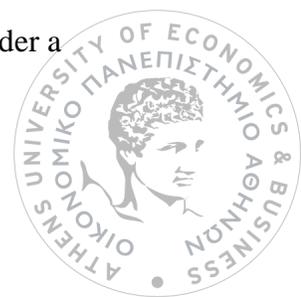


Adapted from Bhattacharjee (2012)

The following sections present the structure and the design of each of the studies in the exploratory and explanatory phases of this doctoral dissertation.

4.2.1 Sales Data Analytics

The first exploratory study of this doctoral dissertation suggests an analytical method to identify several shopping missions at the store level and demonstrate the utility, validity, and replicability of this method using a data set with 4 million baskets from a multinational supermarket chain. Building on shopping goal abstractness and mindset theory literature (Bell, Corsten, and Knox 2011; Gollwitzer 1990; Lee and Ariely 2006), the first exploratory study conceptualizes shopping missions as different instantiations of, or values assigned to, shopping goals under a



deliberative mindset. Furthermore, this study is based on the premise that the design of new methods that uncover potential phenomena can complement more traditional methods, such as experiments, then used to test and elaborate the theories (Gupta et al. 2014). Thus, this research employs the design science paradigm (Hevner et al. 2004) to present an end-to-end analytical method that informs the composition of the shopping missions for different stores and formats. By relying on statistical learning (Hastie, Tibshirani, and Friedman 2009), that is, the partitioning of large amounts of empirical observations, in this case POS data, into training and testing sets to evaluate the shopping mission concept and conclusions induced from observations, this method shows that the identification of shopping missions is contingent upon and an antecedent of, shopping trip abstractness and shopping mindset.

4.2.2 Focus Group Discussions

To better understand and conceptually define shopping missions and their relationship with different shopping goals and mindsets, the second exploratory study includes a series of eight focus group discussions with 58 shoppers. The discussants were randomly contacted via telephone with each session involving 7–8 shoppers and lasted 45 minutes. Discussions were designed to elicit insights from participants in relation to how they schedule and organize their shopping trips, how they perceive the organization of product categories in the stores they visit, how they conceptualize and perceive an ideal assortment organization. Focus groups are generally more suited for exploratory research (Calder 1977; Catterall and Maclaren 2007), thus, this study attempts to build a holistic understanding of the shopping mission concept and generate ideas with respect to how to devise targeted shopper marketing activities of based on the participants' comments and experiences.

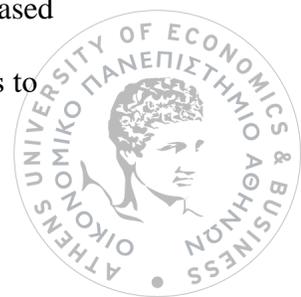


4.2.3 Laboratory Experiment 1

In the first experimental study of the explanatory phase of this doctoral research, the goal is to empirically test the assertion that the congruence between assortment organization and shopping mindset leads to increased purchase rate (i.e., number of items bought per unit of time). A “real-size” (300 inches, 3840 × 2160 resolution screen) three-dimensional (3D) virtual store representation is used to manipulate assortment organization (mission-based vs. taxonomic), while shopping mindset was measured. Seventy-eight shoppers drawn from a consumer panel of the focal retailer were invited to participate. The results of the first experimental study provide initial support to the assertion that the congruence between assortment organization and shopping mindset affects the ease with which consumers carry out shopping tasks.

4.2.4 Laboratory Experiment 2

Building on findings of the first laboratory experiment, we, furthermore, test the effect of the congruence between assortment organization and shopping mindset on unplanned purchase behavior and examine the mediating role of processing fluency. The second laboratory study employs a 2 (mission-based vs. taxonomic assortment organization) × 2 (deliberative vs. implemental shopping mindset) between-subjects experimental design, and uses the same virtual store technology for the manipulation of assortment organization. Shopping mindset was manipulated (instead of measured) using shopping scenarios. One hundred sixty consumers were recruited and were randomly assigned to one of the two assortment organization conditions and to one of the two shopping mindset conditions. The findings of Study 2 suggest that a match between assortment organization and shopping mindset leads, through a greater subjective feeling of ease, to more unplanned purchases. Post hoc analyses suggest that a mission-based assortment organization, which highlights products’ consumption goals, marginally leads to



more unplanned purchases and is congruent with a deliberative shopping mindset, which involves in-store consideration of products. In contrast, a taxonomic assortment organization, which emphasizes the physical characteristics of products, connects with an implemental shopping mindset, which involves purchases decided before entering the store.

4.2.5 Field Experiment

The third and final experimental study of this doctoral dissertation seeks further validates and examines the assortment organization effects on shopping behavior in a real-world setting through a field (quasi-) experiment. This way, a more realistic operationalization of both assortment organization and shopping mindset was applied. In addition, the field setting provides stronger measurements for purchase rate and unplanned purchases. Finally, this study allows the use of scanner data to measure the effect of the congruence between assortment organization and shopping mindset on store performance metrics. Results reveal significant direct effects of assortment organization, such that a mission-based assortment organization increased unplanned purchases. In line with findings in the laboratory studies, the assortment organization \times shopping mindset interaction suggests that this effect is strengthened under a deliberative mindset. Importantly, Study 3 tests whether these effects have an impact at the store level by comparing weekly aggregate basket size data across two stores. A regression analysis reveals that relative basket size increases under a mission-based assortment organization.

Table 3 presents an overview of the studies included in this doctoral dissertation and their general characteristics. However, details about each study's methodology and research design are presented in the relevant chapters (Chapters 5 and 6).



Table 3: Overview of Studies

Study	Date	Description/ Characteristics	Constructs Included	Method of Analysis
Sales Data Analytics	Jul – Sep 2013	A Statistical Learning Application on Sales Data from 6 Stores	<ul style="list-style-type: none"> • Shopping Goals • Shopping Missions 	<ul style="list-style-type: none"> • Cluster Analysis
Focus Group Discussions	Oct – Nov 2013	8 Focus Group Discussions N = 58	<ul style="list-style-type: none"> • Shopping Goals • Shopping Missions • Assortment Organization 	<ul style="list-style-type: none"> • Qualitative Content Analysis
Laboratory Experiment 1	Mar – Apr 2014	Virtual 3D Store N = 78 2 × 2 (Between-subjects)	<ul style="list-style-type: none"> • Assortment Organization • Shopping Mindset • Purchase Rate • Basket Size 	<ul style="list-style-type: none"> • Linear Regression • Simple Slopes Analysis
Laboratory Experiment 2	Apr – May 2014	Virtual 3D Store N = 160 2 × 2 (Between-subjects)	<ul style="list-style-type: none"> • Assortment Organization • Shopping Mindset • Processing Fluency • Purchase Rate • Basket Size • Unplanned Purchases 	<ul style="list-style-type: none"> • Analysis of Variance • Statistical Mediation Analysis
Field (Quasi-) Experiment	Jun – Sep 2014	Physical Store N = 201 2 × 2 (Between-subjects)	<ul style="list-style-type: none"> • Assortment Organization • Shopping Mindset • Processing Fluency • Purchase Rate • Basket Size • Unplanned Purchases 	<ul style="list-style-type: none"> • Linear Regression • Simple Slopes Analysis • Times Series Modelling

4.3 Data Collection and Analysis

The general principles for data collection and analysis methods exploited for the studies of both the exploratory and the explanatory phases of this doctoral dissertation are presented in this section. Detailed presentation of the data collection and results from the analyses are presented in the corresponding chapter of each study.

4.3.1 Data Collection

The initial exploratory study involves the development of a method to identify shopping missions. The demonstration of the utility of the proposed method relies on a sales data set



derived from the point-of-sale (POS) systems of a multinational retailer operating in Greece. To avoid any seasonality effects, the sales data reflect 17 consecutive months, January 2012 to May 2013. Furthermore, the analysis focuses on three pilot stores with different formats: a small convenience store, a supermarket, and a hypermarket, with 220, 1000, and 12000 square meters of selling space, respectively. Examining stores of different sizes helps confirm the validity of the proposed approach, showing that the resulting clusters relate to the external variables in ways anticipated by the theoretical development, previous research, and exploratory discussions. This study also includes three control stores with similar sizes, product assortments, and clientele geodemographic properties, to attest to the consistency and stability of the solution across different conditions. Overall, the sales data set comprises 35,914,213 SKU product-level purchase records from six stores situated in the larger Athens metropolitan area.

The subsequent exploratory study comprises of eight focus group discussion with consumers. Discussants were randomly contacted via telephone and, after an initial screening, offered a voucher for their participation. Each session involved 7–8 shoppers and lasted 45 minutes. Participants provided consent to videotape the discussions, and all recordings were subsequently transcribed. Discussions were guided by a semi-structured group interview guide and were moderated by a group leader.

The first laboratory experiment in the explanatory research phase followed a posttest-only control group design, in which the treatment effect of the shopping mindset variable was measured. The second laboratory experiment involved a factorial design with two factors, that is, assortment organization and shopping mindset, with two levels each, that is, taxonomic vs. shopping mission-based for the former and implemental vs. deliberative for the latter. In this case, while the assortment organization was manipulated, the two levels of the shopping mindset



factor was primed using shopping scenarios (Bargh and Chartrand 2000). The field experiment followed a pretest-posttest (quasi-) experimental design, in which the assortment organization was manipulated by relocating product categories in the store's floor space and measurements of variables took place before and after the rearrangement. All experimental studies data collection through questionnaire instruments consisting of a set of questions (items) intended to capture responses from respondents in a standardized manner through structured questions.

4.3.2 Methods of Analysis

The overall research design of this doctoral dissertation involves a mixed method approach with a variety of studies ranging from statistical learning approaches, to qualitative discussions, and to laboratory and field experimentation. The sections below briefly outline the methods of analysis employed in each study.

4.3.2.1 Cluster Analysis

Cluster analysis refers to a very broad set of techniques concerned with exploring data sets to assess whether or not they can be summarized meaningfully in terms of a relatively small number of groups, or clusters, of observations which resemble each other and which are different in some respects from observations in other clusters (Everitt et al. 2011). Cluster analysis is an unsupervised statistical learning technique. Statistical learning refers to a vast set of tools for understanding data (James et al. 2013). While supervised statistical learning techniques, such as regression, classification, and support vector machines, involve building a statistical model for predicting, or estimating, an output based on one or more inputs, unsupervised statistical learning techniques, such as cluster analysis, involve inputs but no supervising output; nevertheless, we can learn relationships and structure from such data.

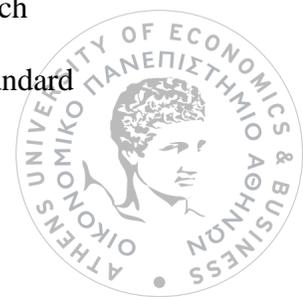


4.3.2.2 Content Analysis

Content analysis is the systematic analysis of the content of a text (e.g., who says what, to whom, why, and to what extent and with what effect) in a quantitative or qualitative manner (Krippendorff 2013). In this qualitative analysis framework, the researcher carefully identifies and applies rules to divide each text into segments that can be treated as separate units of analysis. This process is called unitizing. Subsequently, the researcher constructs and applies one or more concepts to each unitized text segment in a process called coding. For coding purposes, a coding scheme is used based on the themes the researcher is searching for or uncovers as he or she classifies the text. Finally, the coded data is analyzed, often both quantitatively and qualitatively, to determine which themes occur most frequently, in what contexts, and how they are related to each other (Bhattacharjee 2012).

4.3.2.3 Moderated Multiple Regression Model

Likely the most common research design utilized by experimental consumer researchers is a very straightforward manipulation of one or more independent variables that the researcher believes will affect a dependent variable (Fitzsimons 2008). Moderated multiple regression models allow the simple relationship between a dependent variable and an independent variable to depend on the level of another independent variable. The moderated relationship, often referred to as the interaction, is modeled by including a product term as an additional independent variable (Irwin and McClelland 2001). As is the case in laboratory experiment 2 of this doctoral dissertation, a researcher manipulates two independent variables between subjects and performs a two-by-two ANOVA examining their impact on a dependent variable measured on a Likert scale. However, it is often the case that a simple ANOVA framework does not map onto the actual research design the researcher has implemented. One of the most common deviations from the standard



research design described above is, as in the first laboratory experiment and in the field (quasi-) experiment of this doctoral dissertation, to measure, rather than manipulate, one of the key independent variables. It is often the case that researchers dichotomize (often referred to as median splitting) the continuous independent variable. However, by dichotomizing continuous independent variables researchers are quite likely reducing the statistical power available to test their hypotheses (Irwin and McClelland 2001). By inappropriate dichotomizing of continuous data can at times create spurious significant results if the independent variables are correlated (Maxwell and Delaney 1993). The proper analysis includes a linear regression to predict the dependent variable from the continuous independent variable, the manipulated independent variable, and their interaction and a post hoc simple slopes analysis at one standard deviation above and one standard deviation below the mean (Aiken and West 1991).

4.3.2.4 Statistical Mediation Analysis

Mediation analysis is the process of determining whether or not variables acting as an in-between step, called mediators, are present when looking at the relationship between an independent variable and a dependent variable. Rather than hypothesizing a direct causal relationship between the independent variable and the dependent variable, a mediational model hypothesizes that the independent variable influences the mediator variable, which in turn influences the dependent variable. Thus, the mediator variable serves to clarify the nature of the relationship between the independent and dependent variables (MacKinnon 2008). The bootstrapping method for mediation analysis (Preacher and Hayes 2008) is a non-parametric test, and thus, does not violate assumptions of normality and is therefore recommended for small sample sizes. Bootstrapping involves repeatedly randomly sampling observations with replacement from the data set to compute the desired statistic in each resample. Over hundreds, or thousands, of bootstrap



resamples provide an approximation of the sampling distribution of the statistic of interest. This method provides point estimates and confidence intervals by which one can assess the significance or nonsignificance of a mediation effect. Point estimates reveal the mean over the number of bootstrapped samples and if zero does not fall between the resulting confidence intervals of the bootstrapping method, one can confidently conclude that there is a significant mediation effect to report (Zhao, Lynch Jr., and Chen 2010).

4.3.2.5 Times Series Modeling

Aggregate time-series sales performance data are employed in order to model the sales performance of the rearranged (test) store and the unaffected (control) stores of the field experiment. A regression model is specified, so that the log of the ratio of the weekly average basket size index for the test store to the weekly average basket size index for the control store on a dummy variable that captured the assortment organization rearrangement. Moreover, the Durbin–Watson test statistic was employed to detect the presence of autocorrelation, that is, a relationship between values separated from each other by a given time lag, in the residuals, or prediction errors (Angrist and Pischke 2008; Wooldridge 2012).



CHAPTER 5 – IDENTIFYING SHOPPING MISSIONS AND DEVELOPING A MISSION-BASED ASSORTMENT ORGANIZATION

This chapter aims at providing initial empirical insights into, and an understanding of, shopping missions and their impact in the area of assortment organization. It helps to establish appropriate variables and to understand how these are connected together. It seeks to define the phenomenon more precisely, identify relevant courses of action, and gain additional insights before going on to confirm findings using an explanatory experimental research design. At first, an analytical method is developed, which seeks to quantitatively explore data to reveal hitherto unknown connections between shopping trip variables, such as basket variety, basket value, overall shopping trip goal, shopping mindset, and shopping mission. Subsequently, it seeks to develop structures of these constructs by qualitatively identifying relevant or salient consumer behavioral patterns, beliefs, opinions, attitudes, and motivations. Finally, both the analytical results and the results of the focus groups discussions informed the development of a mission-based assortment organization.

5.1 An Analytical Method for the Identification of Shopping Missions

Recent technological advances have shaped retailing into a rapidly evolving, technology-intensive, and data-rich industry and profoundly affected the feasibility for conducting shopper marketing research. The ease with which new analytical techniques can discover patterns in large data sets offers great utility and value, such that “We need to avoid the tendency to downplay such methods [data mining and machine learning] as purely data driven and atheoretical. This is



not to say that there is no value in theory, but *these methods are helpful to identify new phenomena*, new perspectives, and new theory” (Gupta et al. 2014, p. 4, emphasis added).

Prior research employs grocery scanner data to investigate consumer behavioral reactions to price promotions (P. S. H. Leeflang and Parreño-Selva 2011; Mayhew and Winer 1992), brand choice (Chib, Seetharaman, and Strijnev 2014), and cross-category price elasticities (Russell and Petersen 2000), as well as to segment shoppers on the basis of basket size (Bell and Lattin 1998) or other variables such as trip frequency and wallet share (Talukdar, Gauri, and Grewal 2010). Professional market research firms similarly rely on grocery sales data to provide insights to manufacturers and retailers of consumer packaged goods. However, insights on trip-level shopper goals and objectives remain confined to understanding *how* consumers shop, by segmenting shopping trips on the conceptual grounds of overall shopping trip abstractness (Information Resources Inc. [IRI] 2006; Wall Street Journal 2010). The identification of shopping missions goes beyond the segmentation of trip types, to the discovery of constellations of complementary grocery product categories whose sales affinity forms the basis for understanding specific “need states” or *why* a shopper visits the store.

As (shopper) marketing and information technology become increasingly interwoven, the design science paradigm (Hevner et al. 2004) offers an informative and technology-active research approach for marketing research. Design science research focuses on creating and evaluating innovative artifacts (such as tools and methods) that enable researchers to identify new phenomena of interest. The design of new methods that uncover potential phenomena can complement more traditional methods, then used to test and elaborate the theories (Gupta et al. 2014). Analytical data-driven techniques methodologically rely on statistical learning (Hastie, Tibshirani, and Friedman 2009), that is, the partitioning of large amounts of empirical

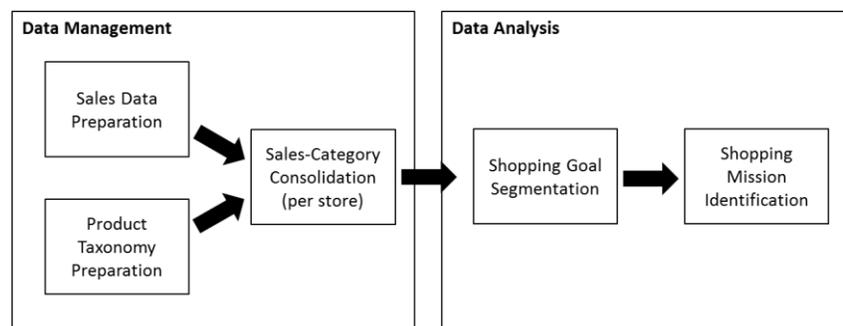


observations into training and testing sets to evaluate the models and conclusions induced from observations. The current work contributes to growing literature that uses statistical learning techniques to generate shopper insights (Cil 2012; Oestreicher-Singer et al. 2013; Papakiriakopoulos, Pramataris, and Doukidis 2009) while also responding to recent calls to identify new phenomena of interest for scholarly marketing research.

5.1.1 Method and Data

This study suggests a data-driven method to identify shopping missions by clustering basket data, according to the product categories included. At the heart of the proposed method is the characterization of each basket on the basis of the categories it includes. The method consists of three data management phases, namely, sales data preparation, category taxonomy preparation, and sales-category consolidation. Two analysis phases follow, namely, shopping goal segmentation and the identification of shopping mission phases. Figure 9 illustrates the proposed method and constituent phases. The following sections present the goal of each phase, along with a discussion of any issues expected to emerge at each point.

Figure 9: Phases of the Method for Identifying Shopping Missions



The demonstration of the utility of the proposed method relies on a sales data set from a multinational retailer operating in Greece. To avoid any seasonality effects, the sales data reflect

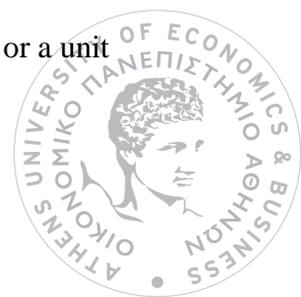


17 consecutive months, January 2012 to May 2013. Furthermore, the analysis focuses on three pilot stores with different formats: a small convenience store, a supermarket, and a hypermarket, with 220, 1000, and 12000 square meters of selling space, respectively. Examining stores of different sizes helps confirm the validity of the proposed approach, showing that the resulting clusters relate to the external variables in ways anticipated by the theoretical development, previous research, and exploratory discussions. This study also includes three control stores with similar sizes, product assortments, and clientele geodemographic properties, to attest to the consistency and stability of the solution across different conditions. Overall, the sales data set comprises 35,914,213 SKU product-level purchase records from six stores situated in the larger Athens metropolitan area.

5.1.2 Analysis and Results

5.1.2.1 Sales Data Preparation

Preparatory steps in the unit quantity field ensured that the variable followed a consistent value format and ruled out any errors caused by operational business processes or systems. The execution of the sales data preparation steps resulted in 35,368,470 individual, SKU-level purchase records (545,745 records omitted). Following the necessary adjustments at the lowermost level of granularity (i.e., SKU level), the unit quantity field can be aggregated to the basket level. This step is necessary because the basket, or individual shopping trip, constitutes the level of analysis for identifying shopping missions. The aggregation of the sales records resulted in 3,798,030 unique baskets for all six stores. Table 4 summarizes the SKU- and basket-level records for the six stores. More fields, such as unique identifiers of the channel in which the purchase occurred, a timestamp to denote the date and time when the purchase occurred, or a unit



price field that designates the total line item price paid, could be included to enrich the insightfulness of this method.

Table 4: SKU- and Basket-level Sales Records for all Stores

Store	SKU-level	Basket-level
Hypermarket Pilot	15,084,588	1,525,229
Hypermarket Control	13,448,929	1,193,077
Supermarket Pilot	2,761,610	412,786
Supermarket Control	2,765,150	369,158
Convenience Pilot	725,562	158,572
Convenience Control	582,631	139,208

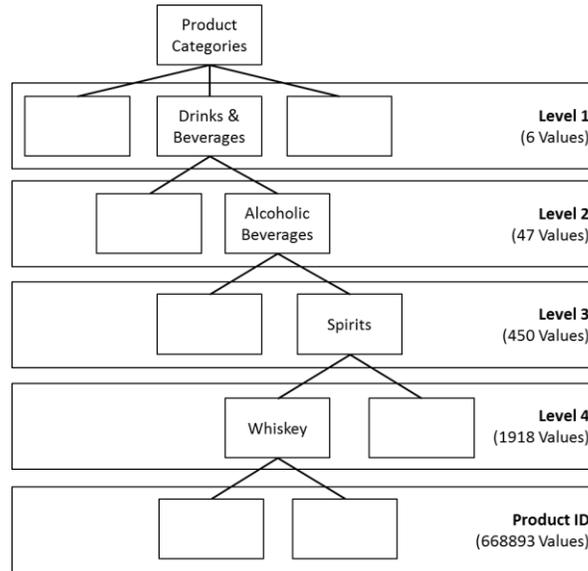
5.1.2.2 Product Taxonomy Preparation

This method requires a product taxonomy that includes identifiers and descriptive fields for all product category levels used by the collaborating retailer. All stores in the study use the same product taxonomy. Because product categories constitute the building blocks of shopping missions, important or destination categories that are not available within a store should negatively affect the shopping missions characterized by these categories. For example, if product categories such as milk, detergents, or diapers are absent from a store’s product offerings, shopping missions such as breakfast, cleaning, or baby care are negatively affected. Figure 10 presents the product taxonomy identified, which includes four product category levels with 6, 47, 450, and 1918 unique category values in each level. As retailer-specific merchandise hierarchies, product taxonomies typically demonstrate uneven depths across branches, which makes it essential to identify the description level that yields meaningful product category associations and to include product identifiers, at the SKU level, to establish a link between the product taxonomy and the sales data sets. Independent qualitative assessment, as well as round-table



discussions with retail executives, resulted in 75 product categories available in all the three store formats under consideration.

Figure 10: Product Taxonomy Structure



5.1.2.3 Sales-Category Consolidation

The basket-level sales data and product category fields that resulted from the previous steps can be combined to create a fact table for each of the six stores under consideration, summarizing all available information. Associations among product categories and the resulting shopping missions should differ across stores, due to the varying product assortments, distribution of shopping trip goals, and regional geodemographic properties. All six fact tables contain 78 variable columns: the basket identifier, serving as the unit of analysis; the basket volume and variety fields, serving as descriptive attributes related to shopping trips; and 75 category fields populated with binary flags (participation matrix) to indicate whether a particular basket contains a product identifier belonging to the particular category (1) or not (0). Table 5 illustrates an example fact table with all available information on the individual basket level for a single store.



Table 5: Example Participation Matrix Structure

Basket ID	Basket Volume	Basket Variety	Category 1	Category 2	Category 3	...	Category 75
153356567	15	5	1	0	1	...	0
153356588	17	6	1	1	1	...	0
153356898	3	1	0	0	1	...	0
153356903	12	12	0	1	1	...	0
153789632	15	7	0	0	0	...	0
289674955	22	6	0	0	0	...	1
303118876	19	7	1	0	1	...	0
...
Unit of Analysis	Shopping Trip Attributes			Category Binary Flags			

The number of observations for each table (table length) corresponds to the number of unique baskets for each store. Table 6 presents and provides descriptive information for all variable fields for each of the six fact tables. Data frames exported from the database management system take the form of .csv or .txt files. Such interoperable file formats can be imported to a host of dedicated statistical analysis software to carry out the subsequent phases of the method.

Table 6: Descriptive Statistics for all Fact Tables

	Hypermarket		Supermarket		Convenience	
	Pilot	Control	Pilot	Control	Pilot	Control
Basket id ⁽¹⁾	1,525,229.00	1,193,077.00	412,786.00	369,158.00	158,572.00	139,208.00
Basket volume ⁽²⁾	24.74	22.56	12.18	11.73	5.77	6.14
Basket variety ⁽³⁾	13.23	13.23	10.12	9.97	5.12	5.27
Category 1 (%) ⁽⁴⁾	31.12	30.04	25.16	26.58	9.65	10.32
Category 2 (%) ⁽⁵⁾	15.63	15.98	11.87	11.52	10.54	9.87
...
Category 75 (%) ⁽⁶⁾	5.66	5.21	4.93	3.78	6.82	7.12

(1) Total observations (rows) of each table

(2) Mean values (unique items per basket)

(3) Mean values (unique categories per basket)

(4) Baskets that include at least one product from category 1 (Laundry Soaps)

(5) Baskets that include at least one product from category 2 (Facial Creams)

(6) Baskets that include at least one product from category 75 (Coffee and Tea)



5.1.2.4 Shopping Goals Segmentation

Shopping goal segmentation involves a cluster analysis using the basket variety measure, that is, the number of unique product categories within a basket, as a clustering input variable. The analysis thus distinguishes between a customer who is buying many items but just from one product category (voluminous basket with few categories) and a shopper purchasing the same number of items but from different categories (voluminous basket with a wide variety of product categories). In analytical terms, the Euclidean distance between basket varieties serves as proximity measure for capturing the (dis)similarity between shopping trips within the k-means partitioned cluster analysis for each fact table, with training and testing sets equivalent to 60% and 40% percent of the available observations, respectively. The gap statistic procedure derives the optimal number of clusters (Tibshirani, Walther, and Trevor 2001). Table 7 summarizes the final cluster solution.

To interpret the cluster analysis results, the basket variety measure serves as an operationalization of shopping goal abstractness. The more (fewer) product categories a shopping trip involves, the more abstract (concrete) its shopping goal. On a per store basis, all baskets can be assigned to three levels of shopping goal abstractness: “concrete,” “relatively concrete,” and “abstract,” according to the basket variety ranges of each resulting cluster. First, clusters 4 and 5 (baskets with the widest variety of categories) combine into an “abstract” group of baskets encompassing a significantly larger number of diverse product categories. Second, clusters 2 and 3 (baskets with a modest variety of categories) group into a “relatively concrete” set of baskets, involving deliberation and satisfaction of short-term, quotidian consumption occasions or special events. Third, cluster 1 (baskets with either a single or few categories) is the

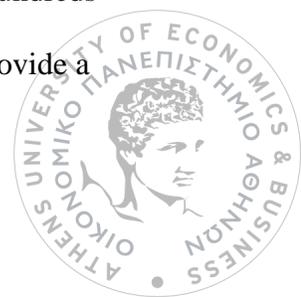


group of “concrete” baskets, because the majority of these trips include shopping for special offers, promotions, and similarly targeted grocery visits.

Table 7: Trip Type Segmentation Results for all Stores

		Pilot			Control		
	Shopping Trip Type	Variety Range	Baskets	Value	Variety Range	Baskets	Value
Hypermarket	Very concrete	“1-3”	3%	1%	“1-3”	3%	1%
	Relatively concrete	“4-11” “12-23”	49%	48%	“4-12” “13-24”	53%	46%
	Abstract	“24-36” “37+”	48%	51%	“25-36” “37+”	44%	53%
Supermarket	Very concrete	“1-2”	8%	4%	“1-2”	9%	4%
	Relatively concrete	“3-9” “10-16”	75%	63%	“3-8” “9-18”	73%	61%
	Abstract	“17-40” “41+”	17%	33%	“19-42” “43+”	18%	35%
Convenience	Very concrete	“1”	13%	7%	“1”	12%	6%
	Relatively concrete	“2-5” “6-11”	80%	77%	“2-5” “6-13”	82%	79%
	Abstract	“12-17” “18+”	7%	16%	“13-20” “21+”	6%	15%

These categories are not to suggest that there are no “abstract” shopping trips, such as fill-in trips for miscellaneous perishables and other daily essentials, with fewer than 16 product categories in the pilot supermarket, or that there are no “relatively concrete” shopping trips, such as assembling the provisions for a picnic or a weekend excursion, with more than 13 product categories in the control convenience store. However, whereas prior literature on shopping trip abstractness elicits shopping trip abstractness directly from shoppers’ psychometric self-reports, this cluster analytic framework relies on observed behavioral measures such as basket variety and thus can effectively and efficiently cope with large sales data sets generated by the hundreds of thousands of shopping trips retailers collect and repost daily. Such an approach can provide a

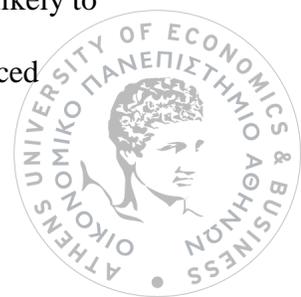


precedent and complement to psychometric measurements of shopping goal abstractness, not a replacement.

Furthermore, a grouping of “concrete,” “relatively concrete,” and “abstract” shopping trips results in a more computationally efficient identification of shopping missions and enhances the interpretability of the results of the subsequent analysis. Providing larger cluster input for the subsequent phase sharpens the accuracy of deriving meaningful product category associations for the identification of shopping missions. Independent analyses for both the joint “relatively concrete” group of baskets with 3 to 16 categories and the separated clusters of 3–9 and 10–16 categories did not produce different results in the identification of shopping missions for the pilot supermarket. Table 7 also provides the total revenue and total share of basket for the three levels of shopping goal abstractness, which is critical to assess the practical value of this study. The total share of baskets and total share of value for the relatively concrete shopping trips decrease with store size. For instance, the value of “relatively concrete” baskets decreases from 78% in the convenience stores to 62% in the supermarket stores under consideration. However, even for hypermarket stores, typically preferred for bulk and abstract shopping, 50% of shopping trips (in terms of both total share and value) are applicable to the identification of shopping missions.

5.1.2.5 Shopping Mission Identification

For each store, a second clustering analysis pertains to each of the three shopping goal abstractness levels. The results for the baskets of “relatively concrete” abstractness reveal distinct and diverse shopping missions; the results for the baskets of “concrete” and “abstract” goals do not produce any interpretable outcomes. These findings lend support to the expectation that shoppers with relatively concrete (cf. concrete or abstract) shopping goals are more likely to operate under deliberative (implemental) mindsets. This conclusion ascribes to the balanced



number of product categories that relatively concrete shopping goals involve, compared with the limited number of product categories that concrete or the large number of product categories that abstract shopping goals involve.

Therefore, the remaining analyses cluster, relatively concrete shopping trips, indicated by basket variety, on the basis of the product categories they contain. This process does not weight the variables, because the product taxonomy preparation ensures that all derived product categories are at the same level of detail and thus of equal discriminative importance. The 75 derived category fields, representing the contents of each basket, provide the clustering input variables. The Jaccard index serves as a proximity measure for capturing (dis)similarity between baskets. The Jaccard index consists of the size of the intersection between two vectors, divided by the size of their union, and is well suited for data sets with binary values. The k-centroid version of k-means cluster analytic method, compliant with the Jaccard index distance measure, then applies. Specifically, the *kcca* function applies, as implemented in the *flexclust* package for the R software for statistical computing. Similar to the shopping goal segmentation phases, training and testing sets with 60% and 40% of observations can be selected, and the gap statistic procedure derives the optimal number of clusters. Table 8 presents the final cluster solution for the pilot supermarket, including basket descriptions and participation probabilities for the 25 most popular product categories in the data set. The final cluster solutions for the remaining stores in this study are available in Appendix A.



Table 8: Identification of Shopping Missions for Supermarket Pilot (Fact Table 3)

		All	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
Basket	Average Basket Variety (Categories)	9.79	7.82	9.62	11.78	10.41	6.54	13.73	14.34
Descriptives	Average Basket Size (Items)	20.63	18.33	19.88	19.63	22.03	21.47	23.97	27.66
	Average Basket Value (€)	17.41	13.66	14.67	14.61	17,59	20,59	24.53	36.43
	Total Share of Baskets (%)	100%	27%	21%	15%	13%	11%	7%	6%
	Number of Baskets	309,591	83,589	65,014	46,438	40,249	34,055	21,671	18,575
Product Categories	Milk	150,204	100 %	23 %	26 %	42 %	38 %	37 %	27 %
	Juice	119,471	75 %	11 %	43 %	13 %	13 %	18 %	47 %
	Coffee and Tea	103,805	68 %	7 %	13 %	13 %	12 %	100 %	21 %
	Chocolate and Confectionary	99,586	34 %	7 %	100 %	13 %	18 %	19 %	19 %
	Eggs	95,654	39 %	59 %	6 %	9 %	34 %	8 %	18 %
	Carbonated Drinks	89,450	2 %	43 %	78 %	9 %	43 %	3 %	17 %
	Biscuits and Sweets	88,840	27 %	11 %	63 %	16 %	16 %	73 %	14 %
	Packaged Bakery	88,662	46 %	13 %	16 %	16 %	5 %	21 %	63 %
	Shampoo and Shower Gel	80,085	6 %	36 %	45 %	100 %	14 %	3 %	16 %
	Packaged Cheese	73,616	6 %	36 %	0 %	12 %	24 %	3 %	84 %
	Fresh Vegetables	72,317	12 %	72 %	7 %	8 %	12 %	15 %	9 %
	Cereals	68,964	63 %	6 %	8 %	8 %	7 %	11 %	6 %
	Yoghurt	67,048	43 %	10 %	19 %	12 %	13 %	22 %	12 %
	Fresh Meat	65,494	5 %	68 %	7 %	10 %	21 %	9 %	8 %
	Pasta	60,943	7 %	13 %	7 %	16 %	100 %	17 %	8 %
	Condensed Milk	55,903	27 %	11 %	9 %	9 %	2 %	68 %	12 %
	Canned Food	55,178	0 %	29 %	4 %	6 %	82 %	10 %	8 %
	Freshly Cut Cheese	55,169	7 %	56 %	6 %	6 %	17 %	6 %	5 %
	Freshly Cut Chartuterie	49,880	5 %	3 %	4 %	8 %	18 %	13 %	78 %
	Chips and Snacks	46,900	6 %	8 %	52 %	13 %	8 %	18 %	9 %
	Household Cleaning	46,163	9 %	12 %	8 %	100 %	14 %	7 %	5 %
	Rice	44,541	4 %	6 %	11 %	14 %	72 %	8 %	9 %
	Dry Fruits and Nuts	38,537	5 %	3 %	63 %	10 %	1 %	3 %	0 %
	Detergents and Washing	38,141	9 %	6 %	8 %	88 %	9 %	10 %	4 %
	Fresh Fruit	33,039	9 %	9 %	17 %	23 %	4 %	7 %	11 %
	Oral Care	21,767	5 %	4 %	4 %	38 %	4 %	7 %	8 %

Table 8 suggests that of the total 412,786 baskets in the supermarket pilot store, 309,591 baskets with a basket variety between 3 and 16 unique categories can be segmented into seven clusters. Cluster 1, involving 27% of the total share of baskets, is characterized by high participation probabilities for milk, juice, coffee and tea, and cereals, referring to a “breakfast” shopping mission. A “meal” shopping mission is apparent in the 21% of baskets included in Cluster 2, dominated by categories such as fresh meat, eggs, and freshly cut cheese. Chocolate and confectionary, carbonated drinks, and biscuits and sweets recur in the “snack” shopping mission baskets of Cluster 3, whereas categories such as shampoo and soaps, household cleaning, and detergents and washing products are in baskets bundled around the “cleaning”

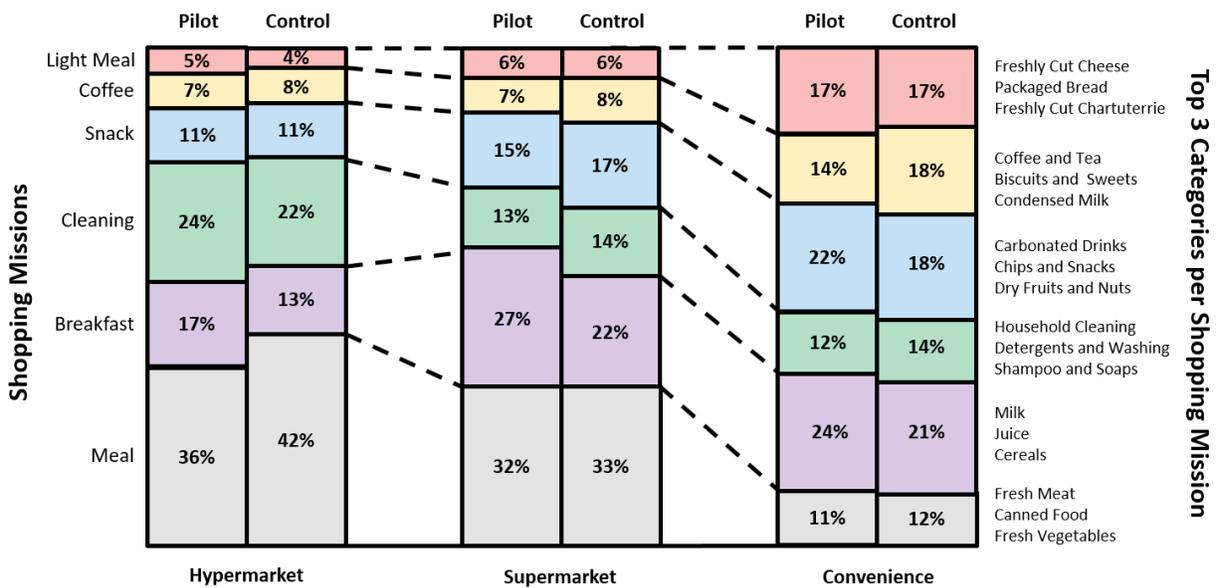


shopping mission of Cluster 4. Pasta, canned food, and rice product categories characterize baskets grouped in Cluster 5, revealing a second “meal” shopping mission; coffee and tea, biscuits and sweets, and condensed milk characterize baskets grouped in Cluster 6. Cluster 7 features a large proportion of cheese and charcuteries that refer to “hors d’oeuvres,” pre-meal (or post) snacks. The category distributions across shopping missions reveal that generally popular categories (e.g., milk and biscuits, sweets; Table 6) can serve as cross-selling “bridges” across shopping missions. Furthermore, categories that score high in some missions (e.g., eggs, which appear 59% in Cluster 2, canned food 82% in Cluster 5) but have growth potential in others (eggs 39% in Cluster 1, canned food 29% in Cluster 2).

This evidence supports both the replicability and the validity of the results (Pastor 2010). Replicability exists according to the proportions of shopping missions identified when independently analyzing the data from the pilot and control stores with the same size (format) and clientele geodemographic properties. In support of validity, the variables exogenous to the cluster model relate to the results in ways anticipated by the theoretical development, previous research, (Breckenridge 1989) and the exploratory focus group discussions (see section 5.1.3. immediately below). Shopping missions identified in smaller stores are of significantly smaller size and value compared with those of larger stores. Smaller stores preferred by consumers for smaller shopping trips predominately serve shopping missions for daily essentials, such as “snacks” and “breakfast.” Larger stores with extensive product assortments, better prices, and parking facilities instead attract larger shares of the “meal” and “cleaning” shopping missions, associated with expensive, voluminous products. Figure 11 summarizes the composition of the shopping missions identified for the six stores, along with the top three product categories for each shopping mission.



Figure 11: Composition of Shopping Missions across Stores



5.1.3 Consumer Focus Group Discussions

To better understand and conceptually define shopping missions and their relationship with different shopping goals and mindsets, a series of discussions with 58 shoppers in eight focus group sessions were conducted. Discussants were randomly contacted via telephone and, after an initial screening, offered a voucher for their participation. Each session involved 7–8 shoppers and lasted 45 minutes. Participants provided consent to videotape the discussions, and all recordings were subsequently transcribed. The shoppers connected shopping trips of modest size and concreteness to personal nutrition and household needs, such as shopping for products for breakfast, dinner, and at-work snacking. Such shopping missions represent need states, usually performed on weekdays and at a relatively small temporal distance from the consumption of the products (same day or day after). As a male shopper in his early 40s notes,

“I often go grocery shopping on the way home from work. I usually look for a meal solution for my dinner later that day or something to have for lunch the day after.”



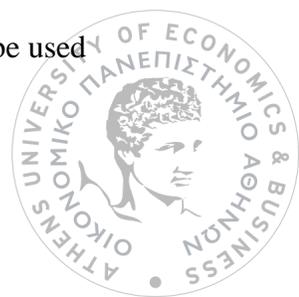
With respect to such visits, shoppers agree that though they have established a shopping mission prior to entering the store, they decide on alternative product solutions while shopping. Shoppers go further to suggest that when in the midst of such trips, they are particularly open in recommendations intended to complement their need states. In the words of a female shopper in her early 30s,

“During my lunch break I regularly go to the store nearby without knowing what to buy... Most of the times I am looking for an ‘inspiration’ and I am open to any healthy and tasty suggestions I might get.”

Shoppers cite convenience and smaller store formats as preferable for fulfilling shopping missions such as breakfast, at-work snacking, and same-day meals, whereas larger establishments such as hypermarket stores are favored for shopping missions relating to household cleaning and personal hygiene. These relationships reflect, among other things, the parking facilities that larger stores offer, which make shopping for heavy packaged goods to meet household cleaning needs more convenient.

5.1.4 Discussion

The results reveal that trips of relatively concrete abstractness constitute a large portion of store visits. However, even if the proportion of relatively concrete shopping trips decreases for larger store formats, their importance in terms of total share of baskets and revenue generated remains high (50% for hypermarkets). Six predominant shopping missions emerge for the stores under consideration: “breakfast,” “meal,” “snack,” “cleaning,” “coffee,” and “light meal & hors d'oeuvres.” Category participation probabilities for each cluster and the reporting differences among the mean size, variety, and value descriptive attributes of shopping missions can be used



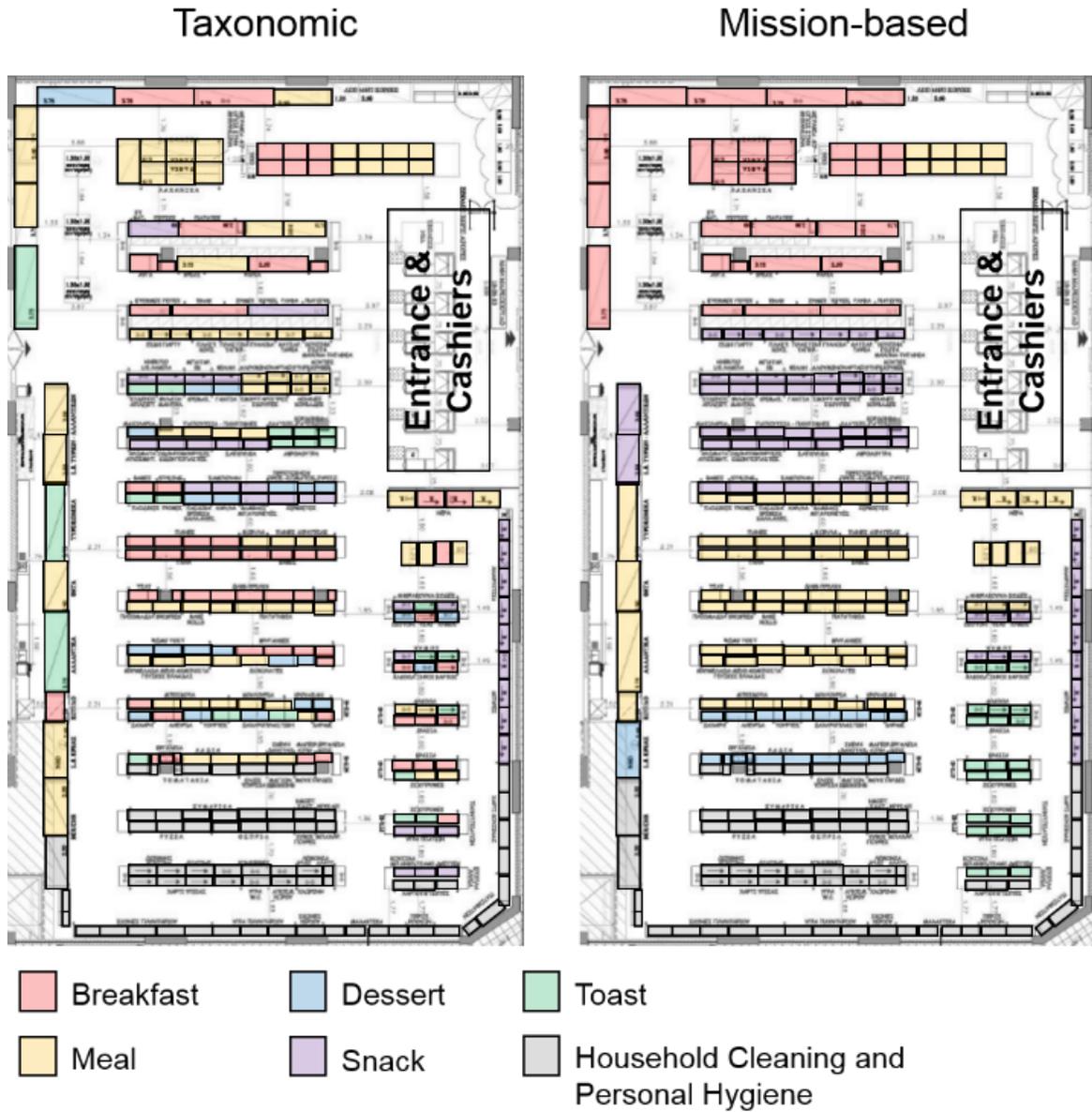
to discriminate and interpret the cluster analysis results and identify shopping missions. Finally, in line with past literature, the tacit channel-category associations, focus group discussions, and statistical learning analyses suggest patterns of format–mission relationships, such that larger formats accommodate “meal” and “cleaning,” whereas convenience stores mostly support “snack” and “breakfast” shopping missions. Knowing the total share of baskets for each mission, practitioners can develop format- or even store-specific, mission-informed shopper marketing actions, uncover insights to strategically position brands and categories within specific shopping missions, and better understand the conditions in which certain trips occur, relate to money spent, and influence coupon redemption and pricing decisions.

5.2 Development of a Mission-based Assortment Organization

The shopping missions identified informed the development and operationalization of a mission-based assortment organization for one the supermarket stores under consideration (pilot store). In line with Chernev (2011), and similarly to goal-derived organizations, which group options (i.e., product categories) according to the underlying consumer goal they serve, mission-based assortment originations take into account the shopping missions, i.e., the a product-related categorization of shopping trips, that product categories serve. While product complementarity is contingent on the shopping goal, which renders the development of precise complementary sets or consumption constellations (Englis and Solomon 1996) cumbersome and often self-conflicting, the prior identification of shopping missions allows a valid development of product complements on the basis of pre-specifying shopper goals. Figure 12 illustrates the taxonomic (original) and the mission-based (derived) assortment organization developed of the focal store.



Figure 12: Assortment Organization Manipulation for the Supermarket Pilot Store





CHAPTER 6 – ASSESSING THE IMPACT OF SHOPPING MISSIONS AND ASSORTMENT ORGANIZATION ON PURCHASE BEHAVIOR

This chapter aims at testing the specific hypotheses and at examining the specific relationships as represented in the conceptual model of this doctoral research. This chapter is more formal and structured than the previous one discussing the exploratory research phase. It seeks to measure the effects, determine the degree of association, and make specific predictions with respect to congruence between assortment organization and shopping mindset. The assortment organization and shopping mission variables are operationalized and are either manipulated or measured in three experimental studies. These studies seek to determine the nature of the relationship between the assortment organization and shopping mindset and test hypotheses with respect to their effects to be predicted on basket size, purchase rate and unplanned purchases. Two laboratory experiments, conducted in laboratory (artificial) settings, seek to establish internal validity, while a field (quasi-) experiment seek to provide external validity to the empirical findings.

6.1 Laboratory Experiment 1: Effects on Purchase Rate

The purpose of the first experimental study is to experimentally test the assertion that the congruence between assortment organization and shopping mindset affects purchase rate. We assess whether consumers will purchase more items per minute (Reber, Wurtz, and Zimmermann 2004) when shopping in a mission-based (taxonomic) assortment organization and under a deliberative (implemental) mindset.



6.1.1 Method

Experimental design and setting. A “real-size” (300 inches, 3840 × 2160 resolution screen) three-dimensional (3D) virtual store simulation technology was employed to manipulate assortment organization (mission-based vs. taxonomic). An actual supermarket of a retailer supporting this research served as template for the virtual store (for more information about the virtual solution technology used, see Accenture [2011]). Appendix B presents the experimental setting. In the taxonomic condition, product categories were organized on the floor space in groups such as “fresh food,” “frozen,” “food cupboard,” “bakery,” and “drinks.” In the mission-based condition, product categories were organized in groups such as “breakfast,” “dessert,” “snack,” and “meal.” We kept visual displays and other store design features constant across the two conditions. Figure 11 provides the manipulation of the assortment organization.

Pretest. Before the study, a pretest was conducted ($N = 14$) to ensure that the experimental manipulation was successful. Specifically, participants were asked to rate the following statement on a seven-point scale anchored by 1 (“their physical characteristics”) and 7 (“consumption goals”): “The products in this store are organized based on.” The pretest showed that the 3D store simulations elicited the desired assortment organization perceptions ($M_{\text{taxonomic}} = 3.29$, $M_{\text{mission-based}} = 5.14$; $F(1, 12) = 12.07$, $p < .01$).

Participants and procedure. Seventy-eight participants drawn from a consumer panel of the focal retailer were offered a voucher as a reward for their participation. Consumers were randomly assigned to one of the two assortment organization conditions. First, in the briefing phase, participants were asked to imagine that it was a weekday afternoon and that on the way home from work, they stopped at a supermarket store, which they had not previously visited, to buy “around ten” grocery items. It was stressed that the number of items was purely indicative



and, as in a real shopping trip, that it was at their discretion to purchase whichever and as many products as they wanted and to take as much time as they deemed appropriate. Next, in the trip planning phase, participants were asked to contemplate which products they would like to purchase in such a store visit (trip planning). Finally, in the shopping task phase, consumers dictated all in-store navigation maneuvers to be performed by an operator, to eliminate any variances in the equipment-handling skills across participants.

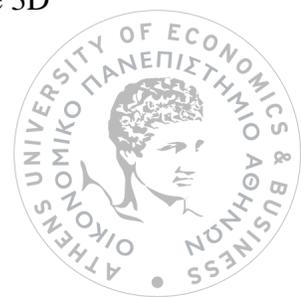
6.1.2 Measures

Shopping mindset. Immediately after concluding their trip planning and just before proceeding with their shopping task, a measure was included for determining whether participants had assumed a deliberative or an implemental mindset adapted from Soman and Zhao (2011).

Consumers indicated their preference between two roles involving either the execution (Role A) or the development (Role B) of an excursion plan on a seven-point scale (see Appendix C). In line with Soman and Zhao, it was expected that a greater preference for the latter would reflect a greater tendency to be in a deliberative mindset, while a greater preference for the former would reflect a greater tendency to be in an implemental mindset.

Purchase rate. In the course of the shopping task, the number of items purchased was captured (Areni & Kim, 1994; Spangenberg, Sprott, Grohmann, & Tracy, 2006) and the seconds spent from entrance to checkout (Hansen and Trope 2013) for all participants. Purchase rate was calculated as the ratio of the number of items purchased to the minutes spent in the store. Such objective metrics add to the validity of the study's measurements (Brüggen, Foubert, and Gremler 2011; Hornik 1984; Lehmann 2004).

Task importance, technology ease of use, and store familiarity. To ensure that the 3D virtual store simulation did not influence how participants approached the shopping task,



participants were how important they perceived the shopping task (1 = “not important at all,” and 7 = “extremely important”). To guard against any variances in the ease of use of the 3D virtual simulation technology across conditions, participants were asked to rate the following statement: “The screen size makes my eyes tired” (1 = “completely disagree,” and 7 = “complete agree”). Finally, given that an existing store served as the template to design the virtual test store, participants’ familiarity with the experimental store was measured (1 = “not familiar at all”, and 7 = “extremely familiar”).

6.1.3 Results

Manipulation and confound checks. Participants in the taxonomic condition perceived the assortment organization as based more on the products’ physical characteristics than participants in the mission-based condition ($M_{\text{taxonomic}} = 3.15$, $M_{\text{mission-based}} = 5.46$; $F(1, 76) = 134.29$, $p < .01$). Moreover, participants in the taxonomic condition did not significantly differ from participants in the mission-based condition in terms of task importance ($M_{\text{taxonomic}} = 5.28$, $M_{\text{mission-based}} = 4.95$; $F(1, 76) = 1.00$, $p = .32$), technology ease of use ($M_{\text{taxonomic}} = 2.72$, $M_{\text{mission-based}} = 2.79$; $F(1, 76) = .12$, $p = .73$), or familiarity with the store ($M_{\text{taxonomic}} = 2.31$, $M_{\text{mission-based}} = 2.15$; $F(1, 76) = .37$, $p = .55$).

Effects of assortment organization and shopping mindset on purchase rate. Assortment organization, shopping mindset, and their interaction term were regressed onto purchase rate. The full model was significant ($R^2 = .74$; $F(3, 74) = 71.78$, $p < .01$). The results reveal a significant assortment organization \times shopping mindset interaction ($\beta = .13$; $t(74) = 14.53$, $p < .01$; all betas reported are unstandardized). However, neither the main effect of assortment



organization ($\beta = .03$; $t(74) = 1.29$, $p = .20$) nor the main effect of shopping mindset ($\beta = .01$; $t(74) = 1.605$, $p = .11$) significantly predicted purchase rate.

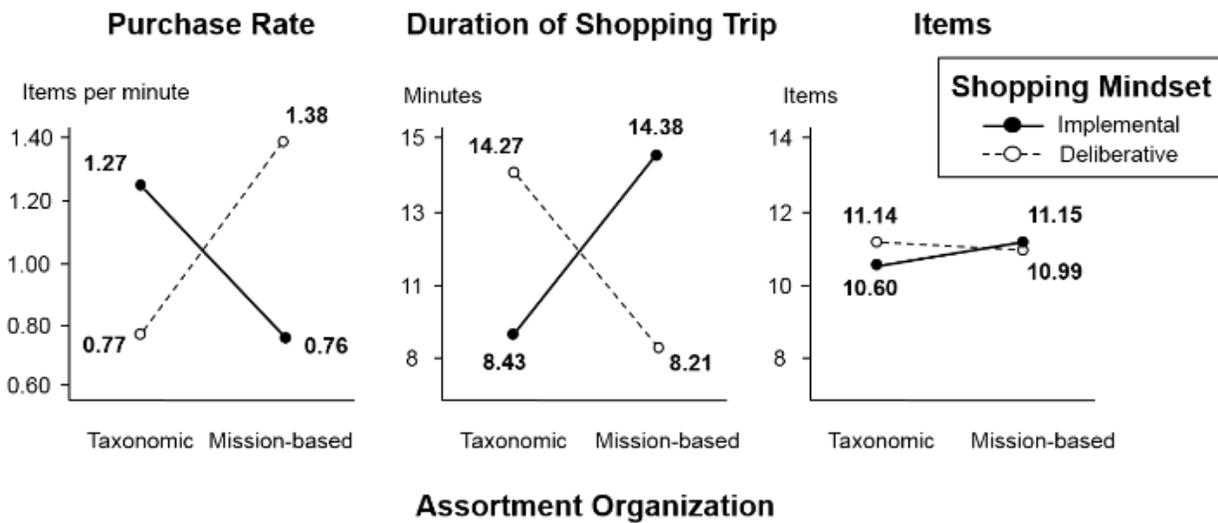
The results from a simple slopes analysis reveal that a mission-based assortment organization leads to higher purchase rates for consumers under a deliberative shopping mindset ($M = 1.38$) than for those under an implemental mindset ($M = .76$; $\beta = .15$; $t(74) = 7.22$, $p < .01$). In contrast, a taxonomic assortment organization leads to higher purchase rates for consumers under an implemental shopping mindset ($M = 1.27$) than for those under a deliberative mindset ($M = .77$; $\beta = -.10$; $t(74) = -4.87$, $p < .01$).

Additional regression analyses, with each of the components of purchase rate (i.e., number of items purchased and shopping trip duration) as dependent variables, showed no significant effects on the number of items purchased ($R^2 = .02$; $F(3, 74) = .59$, $p = .62$). However, the results regarding the trip duration (measured in seconds) indicated a significant full model ($R^2 = .98$; $F(3, 74) = 1,372.35$, $p < .01$) and a significant assortment organization \times shopping mindset interaction ($\beta = -81.95$; $t(74) = -64.14$, $p < .01$). Neither the main effect of assortment organization ($\beta = -4.85$; $t(74) = -1.74$, $p = .09$) nor the main effect of shopping mindset ($\beta = -.07$; $t(74) = -.68$, $p = .60$) significantly predicted the duration of the shopping trip.

As Figure 13 shows, a mission-based assortment organization leads to a shorter shopping duration for consumers under a deliberative shopping mindset ($M = 8.21$ minutes; $\beta = -86.80$; $t(74) = -28.28$, $p < .01$). In contrast, a taxonomic assortment organization reduces shopping duration for consumers under an implemental shopping mindset ($M = 8.43$ minutes; $\beta = 77.10$; $t(74) = 25.12$, $p < .01$).



Figure 13: Simple Slopes of Assortment Organization and Shopping Mindset



6.1.4 Discussion

The results of the first experimental study provide initial support for H₃, that is, the assertion that the congruence between assortment organization and shopping mindset affects the ease with which consumers carry out shopping tasks. Using purchase rate as a behavioral downstream consequence of processing fluency, it was found that consumers under a deliberative shopping mindset purchase a greater number of items per minute when exposed to a mission-based assortment organization while consumers under an implemental mindset purchase a greater number of items per minute when exposed to a taxonomic assortment organization. The effects of assortment organization and shopping mindset on purchase rate were driven by the change in the duration of the shopping trip rather than the number of items purchased. These findings can be attributed to the experimental instructions for the purchase of “around ten” items, which kept the number of items constant across conditions. Therefore, it was interesting to test whether, under no specific instructions for the number of items, assortment organization congruence with shopping mindset still increases purchase rate.



6.2 Laboratory Experiment 2: Effects on Unplanned Purchase

Building on findings of first experimental study, the second experimental study tests the effect of the congruence between assortment organization and shopping mindset on unplanned purchase behavior and examines the mediating role of processing fluency. Specifically, it examines whether consumers purchase more unplanned items when shopping in a mission-based (taxonomic) assortment organization and under a deliberative (implemental) shopping mindset and also explores the underlying mechanism by testing for the mediating roles of purchase rate and processing fluency caused by the congruence between assortment organization and shopping mindset. For this reason, in addition to the purchase rate as a behavioral consequence of processing fluency, a self-reported measure was using adapted from existing metacognition literature (Alter and Oppenheimer 2009). Furthermore, shopping mindset is manipulated (instead of measured) using shopping scenarios.

6.2.1 Method

Experimental design and setting. The second experimental study employed a 2 (mission-based vs. taxonomic assortment organization) \times 2 (deliberative vs. implemental shopping mindset) between-subjects experimental design. It also used the same virtual technology as in Study 1.

Participants and procedure. One hundred sixty consumers were recruited and offered a voucher as a reward for their participation. Participants were randomly assigned to one of the two assortment organization conditions and to one of the two shopping mindset conditions. Shopping mindset was manipulated by priming consumers with (1) a deliberative shopping mindset that involved the in-store consideration of products for an explicit consumption occasion and (2) an implemental shopping trip that involved the purchase of products decided before



entering the store. In particular, for the deliberative shopping mindset condition, we asked participants to imagine that it was a weekday afternoon and that on the way home from work, they received a telephone call from their spouse informing them of an unexpected visit for dinner from a friendly couple. In this case, they needed to deliberate and decide on the purchase of products for their dinner. For the implemental shopping mindset condition, we asked participants to imagine that it was a weekday afternoon and that on the way home from work, they stop at a supermarket store they had not previously visited to buy specific items they had previously written down on a shopping list. (We handed participants a shopping list comprising the most frequent item set from the deliberative condition [Agrawal and Srikant 1994].) In this case, participants needed to implement an explicit and predetermined shopping trip. Similarly to the first experimental study, in both shopping mindset conditions it was stressed that it was at participants' discretion to purchase as many products as they wanted and to take as much time as they deemed appropriate. Finally, consumers in all conditions dictated the in-store navigation maneuvers to be performed by an operator.

6.2.2 Measures

Unplanned purchases. Unplanned purchases were measured with a combination of a self-report measure (Inman, Winer, and Ferraro 2009) and a protocol coding method adapted from Park, Iyer, and Smith (1989). We asked participants to indicate whether each item purchased was specifically planned (brand and category), generally planned (category only), or unplanned during the trip planning phase. Then, two coders independently rated the purchases of all participants. We also conducted an intercoder reliability analysis using the kappa statistic to further determine consistency among coders. The intercoder reliability for the coders was high (κ



= .73, $p < .01$, 95% CI = .57, .89). Disagreements were resolved through discussion and mutual agreement.

Processing fluency. The second experimental study included a process measurement of fluency consistent with prior literature on metacognition (Reber, Wurtz, and Zimmermann 2004; Schwarz 2004a). We measured processing fluency using a five-item scale ($\alpha = .90$), adapted from Labroo and Lee (2006) and Orth and Wirtz (2014). Items included the following: “The way products are placed within this store makes ...” (1) finding products, (2) choosing products, (3) visually processing this store’s interior, (4) visualizing this store’s interior with my eyes closed, and (5) describing this store’s interior at a later point in time “very difficult” (1) to “very easy” (7).

Purchase rate. Purchase rate was calculated using the same method as in the first experimental study, after both the number of items purchased and the seconds spent from entrance to checkout was captured for all participants. Finally, the same scales as in first experimental study were used for task importance, technology ease of use, and store familiarity.

6.2.3 Results

Manipulation and confound checks. The assortment organization manipulation worked as intended. Participants in the taxonomic condition reported assortment organization as based more on the products’ physical characteristics ($M_{\text{taxonomic}} = 3.39$), while participants in the mission-based condition reported assortment organization as based more on the products’ consumption goals ($M_{\text{mission-based}} = 5.53$; $F(1, 158) = 131.89$, $p < .01$). The effect of the shopping mindset manipulation was measured by asking participants to rate the following statement on a seven-point scale, anchored by 1 (“completely disagree”) and 7 (“completely agree”): “In this shopping trip, I knew explicitly which products to buy before entering the store”; ratings significantly



differed across conditions ($M_{\text{implemental}} = 6.43$, $M_{\text{deliberative}} = 3.44$; $F(1, 158) = 443.32$, $p < .01$). Furthermore, participants in the taxonomic condition did not significantly differ from participants in the mission-based condition in terms of task importance ($F(1, 158) = .42$, $p = .52$), technology ease of use ($F(1, 158) = .23$, $p = .63$), or store familiarity ($F(1, 158) = .03$, $p = .89$). Nonsignificant differences across shopping mindset conditions were also found for task importance ($F(1, 158) = 1.18$, $p = .28$), technology ease of use ($F(1, 158) = .65$, $p = .42$), and store familiarity ($F(1, 158) = 1.32$, $p = .25$).

Effects on unplanned purchases. A 2 (assortment organization: taxonomic vs. mission-based) \times 2 (shopping mindset: implemental vs. deliberative) between-subjects analysis of variance (ANOVA) on the number of unplanned items was conducted to investigate whether any effects were due to the congruence between assortment organization and shopping mindset. The results reveal a significant assortment organization \times shopping mindset interaction ($R^2 = .14$; $F(1, 156) = 21.20$, $p < .01$, $\eta_p^2 = .12$). Furthermore, the main effect of assortment organization on unplanned purchases was marginally significant ($F(1, 156) = 3.10$, $p = .08$), while that of shopping mindset ($F(1, 156) = .07$, $p = .79$) did not significantly predict unplanned purchases.

Post hoc analysis showed that unplanned purchases vary as a function of the interaction between assortment organization and shopping mindset. As Figure 14 shows, a mission-based assortment organization leads to a greater number of unplanned purchases for consumers under a deliberative mindset ($M = 3.13$) than for consumers under an implemental mindset ($M = 2.23$; $F(1, 156) = 11.88$, $p < .01$, $\eta_p^2 = .07$). Conversely, a taxonomic assortment organization leads to more unplanned purchases for consumers under an implemental mindset ($M = 2.75$) than for consumers under a deliberative mindset ($M = 1.95$; $F(1, 156) = 9.39$, $p < .01$, $\eta_p^2 = .06$).



Figure 14: Effects of Assortment Organization and Shopping Mindset on Unplanned Purchases



Effects on purchase rate. A 2×2 between-subjects ANOVA on purchase rate revealed similar results to Study 1. In particular, a significant assortment organization \times shopping mindset interaction was found ($R^2 = .86$; $F(1, 156) = 973.93$, $p < .01$, $\eta_p^2 = .86$), while neither the main effect of assortment organization ($F(1, 156) = .34$, $p = .51$) nor the main effect of shopping mindset ($F(1, 156) = .02$, $p = .90$) was significant. In contrast with the first experimental study, ANOVA results on the number of items purchased indicated a significant interaction term ($R^2 = .16$; $F(1, 156) = 27.68$, $p < .01$, $\eta_p^2 = .15$) and nonsignificant main effects for both assortment organization ($F(1, 156) = 2.06$, $p = .16$) and shopping mindset ($F(1, 156) = .03$, $p = .87$). Finally, as in the first experimental study, apart from the nonsignificant main effects for both assortment organization ($F(1, 156) = .16$, $p = .69$) and shopping mindset ($F(1, 156) = .00$, $p = .97$), ANOVA results on the duration of shopping trip showed a significant interaction term ($R^2 = .91$; $F(1, 156) = 1521.97$, $p < .01$, $\eta_p^2 = .91$).



Post hoc analyses revealed that a mission-based assortment organization causes consumers under a deliberative mindset to increase purchase rate ($M = 1.68$), increase the number of items purchased ($M = 13.13$), and, finally, reduce shopping duration ($M = 472.95$; in seconds), compared with consumers under an implemental mindset (purchase rate: $M = .89$; $F(1, 156) = 490.97, p < .01, \eta_p^2 = .76$; number of items purchased: $M = 12.27$; $F(1, 156) = 14.69, p < .01, \eta_p^2 = .09$; duration of shopping trip in seconds: $M = 834.63$; $F(1, 156) = 759.56, p < .01, \eta_p^2 = .83$). The analyses also showed that a taxonomic assortment organization causes consumers under an implemental mindset to increase purchase rate ($M = 1.66$), increase the number of items purchased ($M = 12.88$), and, finally, reduce shopping duration ($M = 468.85$; in seconds), compared with consumers under a deliberative mindset (purchase rate: $M = .88$; $F(1, 156) = 482.98, p < .01, \eta_p^2 = .76$; number of items purchased: $M = 12.08$; $F(1, 156) = 13.01, p < .01, \eta_p^2 = .08$; duration of shopping trip in seconds: $M = 832.20$; $F(1, 156) = 762.40, p < .01, \eta_p^2 = .83$).

Mediation analysis. Bootstrapping analysis was used to test for a multiple mediation model under which the congruence between assortment organization and shopping mindset generates a subjective feeling of ease, which in turn affects purchase rate and unplanned shopping behavior. To extend previous findings, self-reported measures of processing fluency were included to firmly establish a link between the congruence under examination and processing fluency. An ANOVA on self-reported measures of processing fluency indicated significant interaction effects ($R^2 = .17$; $F(1, 156) = 29.47, p < .01, \eta_p^2 = .16$), while the main effects for assortment organization ($F(1, 156) = 2.57, p = .11$) and shopping mindset ($F(1, 156) = .04, p = .84$) were nonsignificant.



Both processing fluency and purchase rate mediated the interaction effect of the assortment organization and shopping mindset on unplanned purchases, while the main effects of assortment organization and shopping mindset were controlled. A significant interaction effect of assortment organization and shopping mindset on processing fluency was found ($\beta = .23$; $t(156) = 5.41$, $p < .01$; all betas reported are unstandardized). Furthermore, the model demonstrates a positive effect of processing fluency on purchase rate ($\beta = .12$; $t(156) = 5.38$, $p < .01$). Finally, the model demonstrates a positive effect of purchase rate on unplanned purchases ($\beta = 1.79$; $t(156) = 4.31$, $p < .01$). In line with the method Zhao, Lynch Jr., and Chen (2010) outline, the complete model included estimates of the indirect effects present in the model. Preacher and Hayes's (2008) method (Hayes's [2013] Model 6 with 2 mediators operating in serial) was used because it is capable of estimating and comparing the indirect effects of multiple mediators. All indirect were estimated effects using 1000 bias-corrected bootstrap samples. The indirect effect of the assortment organization \times shopping mindset interaction on unplanned purchases through processing fluency and purchase rate revealed a positive and significant indirect effect ($\beta = .05$), as the 95% confidence interval did not include zero (CI = .02, .09). The direct effect of the interaction on unplanned purchases was not significant ($\beta = -.06$; $t(156) = -3.59$, $p = .21$). These findings suggest that both processing fluency and purchase rate mediated the effect of the interaction on unplanned purchases, consistent with the conceptual model (i.e., indirect-only mediation; Zhao, Lynch Jr., and Chen 2010).

6.2.4 Discussion

The findings of the second experimental study lend support to H₁, H₂, and H₃, that is, show that a match between assortment organization and shopping mindset leads, through a greater subjective feeling of ease, to more unplanned purchases. Post hoc analyses suggest that a mission-based



assortment organization, which highlights products' consumption goals, marginally leads to more unplanned purchases and is congruent with a deliberative shopping mindset, which involves in-store consideration of products. In contrast, a taxonomic assortment organization, which emphasizes the physical characteristics of products, connects with an implemental shopping mindset, which involves purchases decided before entering the store. These findings provide support for the assertions. Finally, regarding the effects on purchase rate and in contrast with the first experimental study, because of the lack of a specific number of items in the experimental instructions, the effects of assortment organization congruent with shopping mindset increased the number of items purchased, in addition to the duration of the shopping trip.

6.3 Field Experiment: Effects on Basket Size

To further validate and examine the assortment organization effects on shopping behavior in a real-world setting, a field experiment was conducted. A field study gives the opportunity to apply a more realistic operationalization of both assortment organization and shopping mindset. In addition, the field setting provides stronger measurements for purchase rate and unplanned purchases. Finally, this study allows to use scanner data to measure the effect of the congruence between assortment organization and shopping mindset on store performance metrics.

6.3.1 Method

Experimental design and setting. In the third experimental study, the effects of the two types of assortment organization (mission-based vs. taxonomic) were tested by measuring shopping mindset using a pretest/posttest between-subjects field experiment (quasi experiment). The experimental setting was the focal store, whose scanner data were used to identify the shopping



missions (see exploratory empirical research). Assortment organization was manipulated by relocating product categories in the store's floor space (see Figure 11). Before the rearrangement, product categories were organized on the floor space according to their physical characteristics, in groups such as "fresh food," "frozen," "food cupboard," "bakery," and "drinks," and also communicated through in-store visual displays. The pretest period served as the taxonomic assortment organization condition for the experiment. The rearrangement period lasted for two weeks, in which the store operated as normal. Product categories were relocated across the store's floor space to join products into coherent groupings, highlighting shopping missions such as "breakfast," "dessert," "meal," and "snack." The posttest period took place three months after the rearrangement, to avoid halo effects, and served as the mission-based assortment organization condition. The third experimental study also took place during a time of year that the firm deemed unaffected by seasonal variations, holidays, or other cyclicalities. The pretest/posttest design reduces the likelihood of confounds associated with different store locations, staff, competitors, customer demographic, and socioeconomic properties. Consistent with prior literature on store remodeling (Brüggen, Foubert, and Gremler 2011; Dagger and Danaher 2014), other servicescape features, such as the location of checkout counters, interior decorating, and cleanliness, or store ambience and atmospheric conditions, such as noise and lighting were not altered. Finally, management kept pricing, product mix, advertising, and promotion at a similar level throughout the study.

Participants and procedure. Two hundred one consumers were randomly intercepted and interviewed upon both entering and exiting the store. To qualify for the interviews, consumers needed to agree that they normally do their shopping themselves, as disfluency was assumed for consumers who were not regular shoppers, regardless of the assortment organization condition.



Then shopping mindset was measured before participants began their shopping. In the next step, participants were prompted to proceed with their shopping task, while experimenters captured the seconds spent from entrance to the cash register. After each customer had finished shopping, including payment, the experimenter took their register receipts and solicited the rest of the measures.

6.3.2 Measures

Shopping mindset. Participants were asked to indicate which of the following statements, adapted from Büttner et al. (2013), applied to their shopping trip on a seven-point scale (1 = “I have already decided which products to purchase before entering the store,” and 7 = “I will deliberate about which products to purchase while in the store”). According to the literature, lower ratings reflect an implemental mindset, and higher ratings reflect a greater tendency to be in a deliberative mindset. A greater number of shoppers in deliberative mindset was observed for both the pretest and posttest periods ($M_{\text{taxonomic}} = 5.63$, $M_{\text{mission-based}} = 5.71$; $F(1, 199) = .05$, $p = .83$).

Purchase rate, processing fluency, and unplanned purchases. Purchase rate using was calculated using the same method as in the previous studies. Furthermore, the same scales as in the second experimental study were used for processing fluency and unplanned purchases.

6.3.3 Results

Manipulation check. On a seven-point scale, participants in the pretest period reported that the store’s assortment organization was based more on the products’ physical characteristics ($M_{\text{taxonomic}} = 3.29$) than participants in the posttest period ($M_{\text{mission-based}} = 5.39$; $F(1, 199) = 129.77$, $p < .01$).



Effects on unplanned purchases. The full regression model was significant ($R^2 = .89$; $F(3, 197) = 524.05$, $p < .01$) when predicting unplanned purchases from assortment organization, shopping mindset, and their interaction. The results reveal a significant assortment organization \times shopping mindset interaction ($\beta = .89$; $t(197) = 37.70$, $p < .01$; all betas reported are unstandardized), a marginally significant main effect of assortment organization ($\beta = .08$; $t(197) = 1.74$, $p = .08$), and a nonsignificant effect of shopping mindset ($\beta = -.001$; $t(74) = -.06$, $p = .95$). A simple slopes analysis at one standard deviation above (deliberative) and one standard deviation below (implemental) the mean (Aiken and West 1991) of shopping mindset showed that a mission-based assortment organization leads to a higher purchase rate for consumers under a deliberative shopping mindset ($\beta = 1.00$; $t(197) = 17.21$, $p < .01$), while a taxonomic assortment organization increases purchase rate for consumers under an implemental shopping mindset ($\beta = -.79$; $t(197) = -11.32$, $p < .01$). These results are consistent with previous findings.

Effects on purchase rate. Similar to the laboratory studies, assortment organization, shopping mindset, and their interaction were regressed onto purchase rate, while the number of items purchased and shopping trip duration served as dependent variables. When predicting purchase rate, the analysis revealed a significant full model ($R^2 = .83$; $F(3, 197) = 324.87$, $p < .01$) and a significant assortment organization \times shopping mindset interaction ($\beta = .15$; $t(74) = 30.35$, $p < .01$; all betas reported are unstandardized). Moreover, significant results were found for the full model ($R^2 = .64$; $F(3, 197) = 118.33$, $p < .01$) and the interaction term ($\beta = .91$; $t(197) = 18.22$, $p < .01$), when predicting the number of items purchased, and for the full model ($R^2 = .99$; $F(3, 197) = 6,583.29$, $p < .01$) and the interaction term ($\beta = -71.25$; $t(197) = -135.57$, $p < .01$), when predicting shopping trip duration. Consistent with the study's



predictions, neither the main effect of assortment organization nor the main effect of shopping mindset was significant when predicting purchase rate, number of items purchased, or shopping trip duration. Finally, simple slopes analysis at one standard deviation above (deliberative) and one standard deviation below (implemental) the mean (Aiken and West 1991) of shopping mindset revealed simple slopes that are significant and of opposite signs. In particular, it was found that a mission-based assortment organization leads to higher purchase rates for consumers under a deliberative shopping mindset ($\beta = .14$; $t(197) = 70.97$, $p < .01$) while a taxonomic assortment organization increases purchase rates for consumers under an implemental shopping mindset ($\beta = -.15$; $t(197) = -10.85$, $p < .01$). These results are consistent with previous findings.

Effects on basket size. In this study, it was investigated whether the effects of the assortment organization and its congruence with shopping mindset affect store performance. Aggregated weekly scanner data were collected for the periods both before and after the rearrangement of the product categories. It was predicted that the effects of a mission-based assortment organization on unplanned purchases and its congruent effects with the deliberative mindset would improve performance in terms of basket size; to test this hypothesis, six months of aggregate weekly scanner data before the rearrangement of categories were compared with six months of aggregate weekly scanner data after the rearrangement of categories. Weekly average basket size increased significantly between the two periods ($M_{\text{mission-based}} = 63,742$, $M_{\text{mission-based}} = 79,490$; $t(46) = -10.55$, $p < .01$), suggesting that the rearrangement of categories had a positive impact on basket size.

To further validate the effects of the rearrangement on basket size, it was tested whether the increase in weekly average basket size was greater for the store rearranged than an unaffected



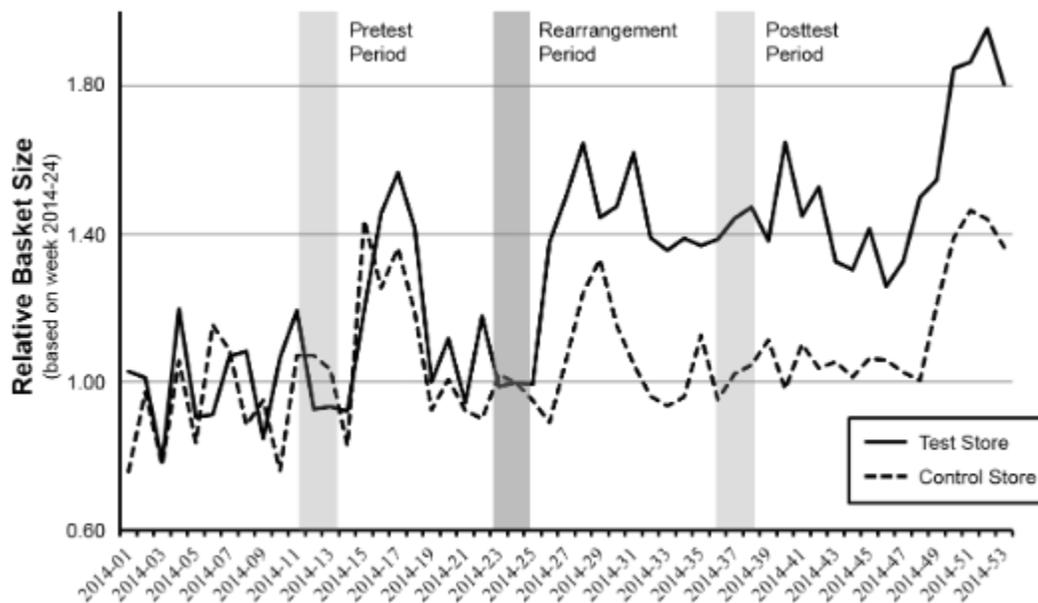
control store. Weekly aggregated scanner data from a store of similar size, assortment, number of staff, clientele demographic, and socioeconomic properties provided by the focal retailer were utilized. A basket size index for each store was first computed to compare relative changes in basket size. The weekly average basket size for the three-week rearrangement period was used as a baseline for the index calculation. In line with prior research (Dagger and Danaher 2014), the log of the ratio of the weekly average basket size index for the rearranged (test) store was regressed to the weekly average basket size index for the unaffected (control) store on a dummy variable that captured the assortment organization rearrangement, as follows:

$$\log \left(\frac{\text{Indx(Basket Size)}_t^{\text{Test}}}{\text{Indx(Basket Size)}_t^{\text{Control}}} \right) = \beta_0 + \beta_1 AO_t + \varepsilon_t,$$

where $AO_t = 0$ before the rearrangement and $AO_t = 1$ after the rearrangement, for weeks $t = 1, 2, \dots, 48$ (i.e., 24 weeks before and 24 weeks after the rearrangement period). The results reveal a significant effect of assortment organization ($\beta_1 = .10$; $t = 8.09$, $p < .01$; Durbin-Watson: n.s.), suggesting that the weekly average basket size index for the test store relative to the control store increased after the rearrangement. Figure 15 presents the relatively weekly average basket size indexes of both the test and control stores.



Figure 15: Basket Size Indexes for Test and Control Stores



6.3.4 Discussion

The findings of the third experimental study provide support for H_1 and H_2 in a real-world setting. Significant direct effects of assortment organization were found, such that a mission-based assortment organization increased unplanned purchases. In line with the findings in the laboratory studies, the assortment organization \times shopping mindset interaction suggests that this effect is strengthened under a deliberative mindset, consistent with the hypotheses. The third experimental study also suggests that the congruence of assortment organization and shopping mindset directly affects the number and rate at which items are purchased, especially under a deliberative shopping mindset. Finally, the third experimental study allowed to test whether these effects have an impact at the store level by comparing weekly aggregate basket size data across two stores. A regression analysis revealed that relative basket size increases under a mission-based assortment organization.



CHAPTER 7 – CONCLUSIONS

The purpose of this concluding chapter is to tie together, integrate, and synthesize the various research issues, topics, and findings covered in the body of this dissertation, and to make comments upon the meaning of all of it. This includes providing a research overview and answers to the dissertation research questions. This chapter also remarks the contribution of this doctoral research by identifying its theoretical and managerial implications. Finally, this chapter highlights the limitations of this doctoral research and offers directions and areas for future research enquiry.

7.1 Research Overview

This doctoral research is based on the premise that the infusion novel technologies in addition to introducing new shopper touch points, offers advanced analytical capabilities, which can inform how best to use the sheer amount of data already available and tap their shopper marketing potential. Consumers walk into stores every day with specific shopping missions; it is the task of retailers and consumer goods manufacturers to provide product/service offerings that stimulates them to make a purchase. But the ability to develop relevant offerings that are tailored to people with different shopping missions, and create an experience they enjoy, requires that retailers have deeper insights than before. Developing a better understanding of customers is an essential first step in creating a more consumer-centric shopping experience.

Retailers and consumer goods manufacturers need to understand what shopping missions attract customers to their stores, what customers need while on those missions, and how they go about shopping. Once they have these insights, retailers and manufacturers of consumer



packaged goods can develop store formats, merchandising and servicing strategies that are more closely aligned with the shopping strategies, needs and preferences of their target customers.

This doctoral research conceptualizes shopping mission as an instantiation of or value assigned to the deliberative shopping mindset, that is as a product-related categorization of shopping trips that involves the specific need states of shoppers entering stores. The dissertation includes an exploratory empirical research, which provides an analytical method for the identification of shopping missions from sales data and test the utility of this solution on a sales data set from six grocery stores. The outcome of this process is the identification of a number of predominant shopping missions emerging from the stores under consideration, the understanding and conceptual definition of shopping missions and their relationship with different shopping goals and mindsets. The explanatory empirical research of this dissertation involves three experiments, in which a conceptual framework that models the effects of the congruence between assortment organization and shopping mindset on a number of consumer behavioral variables, such as basket size, shopping duration and unplanned purchases is developed and empirically tested.

7.2 Research Contribution

7.2.1 Theoretical Implications

This research contributes to the existing knowledge coming from different disciplines that are related to shopping missions and their impact in the area of assortment organization. Results of this doctoral research have implications for researchers interested in how consumers move down the path to purchase, and enquire in substantive areas such as retailing management, shopper



behavior, and marketing analytics. The theoretical implications of this research are summarized below:

7.2.1.1 Defines the Concept of Shopping Mission

This research contributes to the consumer purposive behavior literature by shedding light on the conceptual relationship of shopping goal, shopping mindset, and shopping mission. This doctoral dissertation draws on motivational social psychology theories to suggest that the psychological processes associated with either the goal-setting or goal-striving (Bagozzi and Dholakia 1999) phase of goal-directed decision making and goal pursuit, activate different cognitive procedures while shopping. This research makes reference to the mindset theory of action phases, proposed by Gollwitzer and colleagues, to conceptualize shopping mission as an instantiation of—or value assigned—to the deliberative shopping mindset, that is, a product-related categorization of shopping trips that involves the specific need states of shoppers entering stores. To the best of the author’s knowledge his is the first research to theoretically propose that, and empirically examine if, shopping mindset is a physiological process contingent on the overall shopping trip goal assumed by the shopper prior to entering the store.

7.2.1.2 Develops an Analytical Method

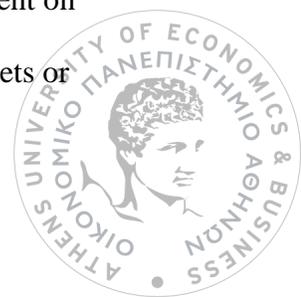
This research shows that novel technologies, in addition to introducing new shopper touch points, offer advanced analytical capabilities that can indicate how best to use the sheer amount of data already available and tap their shopper marketing potential. The exploratory empirical part of this doctoral research employs the design science paradigm of information systems research proposed by Hevner and colleagues to present an end-to-end analytical method that identifies shopping missions from sales data and informs the composition of the shopping



missions for different stores and formats. This research suggests that the design science paradigm offers an informative and technology-active research approach for shopper marketing and contributes to growing literature that uses statistical learning methodological artifacts to identify new phenomena of interest for scholarly marketing research and to complement more traditional methods that test and elaborate the theories (Gupta et al. 2014). The application of this analytical method on a data set of a collaborating retailer provides empirical evidence that the identification of shopping missions is contingent upon and an antecedent of, shopping trip abstractness and shopping mindset. This suggests, that the process of designing measures for abstract purchasing behavioral constructs, such as trip types and shopping missions, is readily available through the exploitation of sales data.

7.2.1.3 Proposes a Cross-category Mission-based Assortment Organization

This doctoral research addresses recent calls from retailing and consumer behavior researchers to move the research focal points beyond standalone brands and isolated categories to cross-category shopper marketing activities (Bezawada et al. 2009; Drèze and Hoch 1998; P. S. Leeflang and Parreño-Selva 2011; Russell and Petersen 2000). This research adds to previous assortment organization studies at the cross-category level, which are scarce and limited on attitudinal effects (i.e., store preference) of substitute-based versus complements-based assortment organizations (Diehl, Herpen, and Lamberton 2015). Along the conceptual distinction between taxonomic and goal-derived assortment organizations proposed by Chernev (2011), this doctoral research proposes an assortment organization by taking into account the shopping missions, i.e., a product-related categorization of shopping trips, that product categories serve. A mission-based assortment organization suggests that product complementarity is contingent on the shopping goal, which otherwise renders the development of precise complementary sets of



consumption constellations (Chaplin and Lowrey 2010; Englis and Solomon 1996) cumbersome and often self-conflicting. Thus, this research suggests that a valid development of a goal-derived assortment organization requires pre-specifying shopper goals and should take into account their conceptual relationships with shopping missions.

7.2.1.4 Examines the Congruence Between Shopping Mindset and Assortment

Organization as an Antecedent of Processing Fluency

This doctoral research sheds light on the mechanism under which cross-category assortment organization affects actual purchase behavior variables such as unplanned purchases and basket size. Drawing from the mindset theory of action phases (Gollwitzer 2012) and metacognitive experiences literature (Garbarino and Edell 1997; Janiszewski and Meyvis 2001; Schwarz 2004a), this research shows that the effects of assortment organization are contingent on the mindset under which a consumer enters the store.

This research provides implications for the fluency literature stream in two ways. First, previous research has recognized that the congruence between two factors can lead to increased processing fluency (Coulter and Roggeveen 2014; Kidwell, Farmer, and Hardesty 2013; Labroo and Lee 2006; Wadhwa and Zhang 2015). This research expands this literature by showing that the congruence between store organization and shopping mindset can drive processing fluency. Second, previous research has investigated the consequences of processing fluency, such as increased spending (Herrmann et al. 2013), brand logo preference (Janiszewski and Meyvis 2001; Labroo and Lee 2006), and purchase intention (Coulter and Roggeveen 2014). We enrich this research by showing that processing fluency is connected with purchase rate and unplanned individual behavior.



7.2.1.5 Empirically Investigates the Behavioral Consequences of the Congruence Between Shopping Mindset and Assortment Organization

This research expands prior research in the unplanned purchase behavior literature (Bell, Corsten, and Knox 2011; Inman, Winer, and Ferraro 2009; Park, Iyer, and Smith 1989). This stream of the literature investigates how different factors affect unplanned purchase behavior. Previous studies suggest that consumers buy most unplanned purchases when shopping in unfamiliar stores and when there is no time pressure (Park, Iyer, and Smith 1989), whereas others focus on consumer individual traits as antecedents of unplanned purchase behavior (Beatty and Ferrell 1998; Rook and Fisher 1995). More recent research investigates the relationship between unplanned purchases and certain category characteristics, such as hedonism (Inman, Winer, and Ferraro 2009), or preshopping factors, such as the abstractness of the shopping goal (Bell, Corsten, and Knox 2011). This doctoral research expands prior research in the unplanned purchase behavior literature by employing a metacognitive experience theoretical lens (Reber, Wurtz, and Zimmermann 2004; Schwarz 2004a) and introducing the notion of purchase rate as an objectively measured behavioral consequence of processing fluency. Thus, this dissertation suggests and shows that the congruence between assortment organization and shopping mindset leads to higher unplanned purchases due to increased purchase rates.

7.2.2 Managerial Implications

Results of this dissertation provide a number of impactful implications for retailers and manufacturers of consumer packaged goods. Reporting, merchandising, sales development, customer development, promotion management, store management, and store network management practices may benefit from the findings of this research. The managerial implications of this research are summarized below:



7.2.2.1 Managerial Implications with respect to the Identification of Shopping Missions

This research presented a method which enables retailers to identify periodically and in advance the compositions of shopping missions that each of their stores or channels accommodates.

These shopping missions are expected to remain unchanged for a relative large period of time, which allows retailers to build upon a number of shopper marketing actions. Retailers can focus on the shopping missions that matter most for their stores and develop format or even store-specific mission-informed shopper marketing activities and gain a larger share of consumers' shopping trips and wallets. For instance, a retailer may build format brands based on the shopping mission (convenience stores for 'snack,' supermarket for 'breakfast' etc.).

Retailers and manufacturers of consumer packaged goods are able to see how shopping missions vary across shopping goals and formats and can strategically position their categories and brands within specific shopping missions to increase relevance and convenience to shoppers. Retailers can connect shopping goals and mission to provide further understanding of the condition for which certain trips occur. For example, a retailer might be interested to see if breakfast is only purchased as part of major trips, whereas a manufacturer may seek to improve the penetration of a category of his interest in "meal" except from "breakfast." Similarly, practitioners could investigate how shopping missions and goals relate or influence money spent, coupon redemption and pricing decisions. The above analysis can further be enhanced with demographic information, as it comes from loyalty programs, and go beyond existing conventions and explore new approaches for improving the shopping experience. Moving from conventional customer profiling (i.e., demographic segmentation) to basket profiling (i.e., behavioral segmentation) goes beyond traditional category management that characterizes the



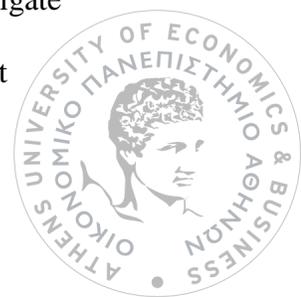
FMCG industry since the early 90s, and provide avenues for growth through relevance, convenience, customization and efficiency.

Furthermore, data-driven approaches in shopper behavioral analysis provide room for innovation in retail business models (Chesbrough 2010). Even with limited data sources and minimum investments in infrastructure and business processes, retailers can leverage their distinct advantage of being the customer's closest link to the marketplace (Lusch, Vargo, and O'Brien 2007), establishing themselves as infomediaries between shoppers and manufacturers of consumer packaged goods (Grover and Teng 2001).

7.2.2.2 Managerial Implications with respect to the Organization of Assortments

This dissertation suggests that retailers and manufacturers of consumer packaged goods should be cognizant of the different mindsets consumers assume before entering stores and the interplay of these mindsets with different assortment organizations. In particular, this doctoral research shows that the cognitive fit of a mission-based assortment organization with the deliberative mindset produces significant effects on unplanned purchase behavior and basket size. This is likely particularly true for supermarkets and convenience stores, in which consumers enter mostly under a deliberative mindset and with a specific shopping mission in mind. Conversely, we expect the congruence between taxonomic organizations and implemental mindsets to be more evident in hypermarkets, in which shopping often involves the purchase of a large number of previously decided-on products.

A key finding of this research is that processing fluency has a positive effect on purchase rates (i.e., the number of items purchased per unit of time) and, subsequently, on unplanned purchases and basket size. In contrast with the current practice of making consumers navigate longer in a store to prolong their stay and, thus, to purchase more, this study suggests that



retailers should facilitate shopping (i.e., increase processing fluency) to increase purchase rates, regardless of how long they plan to stay in the store. This is a significant finding because it supports the contemporary consumer who is under a lot of time pressure and contradicts the main paradigm of the previous decade for store layout organization.

Therefore, managers should focus more on this metric by monitoring the average purchase rates for each store and making the appropriate adjustments to store layout and merchandising. The findings provide an indication about the metacognitive experience mechanism under which the organization of assortments affects unplanned purchase behavior and basket size, both of which are of particular interest to retailers and manufacturers of consumer packaged goods. Therefore, retailers should take into account processing fluency when designing store environments to create more effective layouts that encourage increased spending.

With regard to the question of which assortment organization retailers should follow (i.e., mission-based or taxonomic) to increase store performance, the answer is clear: It depends. Today, most retailers, especially in grocery retailing, follow a taxonomic assortment organization. This study clearly shows that this is not the best choice if consumers enter the store under a deliberative mindset with a shopping mission in mind. It becomes even more significant considering that, today, there is a clear tendency for consumers to visit stores more frequently with a specific mission in mind, rather than weekly or monthly. The field measurements of this research also corroborate this; with the observed number of shoppers to be greater in deliberative mindsets for both the pretest and posttest periods. This finding further elucidates why the average basket size of the focal supermarket test store increased after the store layout change from a taxonomic to a mission-based assortment organization.



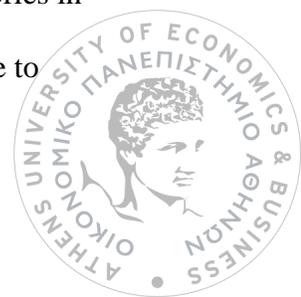
Thus, this doctoral research raises a topic of significant importance and derives a new set of recommendations for practitioners in the retail industry regarding store layout and assortment organization decisions. It suggests a new way of thinking for retail management, not at the product category level but at the shopping mission level. Currently, the retail sector focuses on managing product categories and mostly deals with assortment, promotion, and pricing decisions at the product category level. This research proposes the higher-order notion of shopping mission, which involves grouping together complementary product categories serving the same goal. In light of the current results, it would be worth investigating the impact of this way of thinking on other important retail management decisions, such as the design of consumer communications and in-store promotions at the shopping mission level rather than at the product category level.

7.3 Limitations and Future Research

Additional research should address some limitations of this doctoral research and build on its findings. In the sections below, the limitations of this doctoral research are organized along two basic pillars, that is, limitations and future research related to the conceptual framework and testing of consumer behavioral theory, and limitations and future research related to the methodological issues and the design science paradigm for information systems research.

7.3.1 Future Research Related to the Conceptual Framework

This doctoral research examines how consumers respond to the different assortment organizations by designing stores with either mission-based or taxonomic organizations. However, retailers often use multiple assortment organizations in parallel or place categories in multiple locations. For example, a grocery retailer can use a stand in the front of the store to



serve a “lunch” mission and also have the same categories on other shelves under a taxonomic organization. Further research could investigate how stores adopting a hybrid strategy of both mission-based and taxonomic organizations influence in-store behavior. Similarly, further research could investigate hybrid shopping mindsets, which may include a deliberative mindset for part of the shopping trip (e.g., shopping for a baby’s birthday party) and an implemental mindset for the remainder of the shopping trip (e.g., shopping for infant formula and diapers).

Further research should also test whether grocery shopping trips performed through computer-mediated environments, such as retail websites, are more targeted and concrete and consciously refer to predetermined shopping goals. Moreover, whereas retailers design their shopping environments to maximize the duration of the shopping trip, this research shows that there is a trade-off between maximizing the time spent shopping and maximizing convenience. Further research could build on this finding and investigate the effect of actual time spent or distance covered in the store. Online experiments using objective measurements, such as click streams (from google analytics) as proxy measures for shopping duration and distance, and path (browsing sequence), could also shed light on this issue.

In addition, this research shows that the congruence between assortment organization and shopping mindset leads to higher purchase rates, which in turn lead to positive outcomes regarding in-store purchase behavior. Further research could investigate the boundary conditions of this process—for example, when a consumer enters a store with a more hedonic shopping motivation and spends more time shopping for the specific objectives.

Furthermore, retailers often combine a mission-based assortment organization with a promotion activity such as a “meal deal.” Further research could examine the conditions under which such “mission-framed” promotions are linked to money spent and their influence on

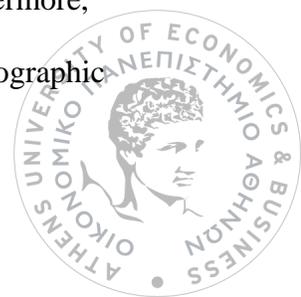


coupon redemption and pricing decisions. For example, the effects of substitute vs. complement vs. neutral (irrelevant) mission-framed promotions and their interplay with different levels of discount depth (low vs. high) and discount type (money off vs. discount off) are interesting topic for additional investigation. Further insightful research with respect to promotions could involve situations of cognitive (mis)matching between shopping missions and assortment organizations and their impact on the processing fluency of in-store information and experience. What if a shopper enters with a “breakfast” shopping mission and comes across a “breakfast-relevant” promotion involving a free gift versus a “cleaning” special offer for 20% off?

7.3.2 Future Research Related to the Research Methodology

Further research with respect to the research methodology includes a controlled interrupted time series design. This allows for the estimation of the level and slope impacts of the mission-based organization, which is not possible with the linear regression introduced in the third experimental study, through a generalized least squares regression model with autocorrelation specification (if any). It is expected that the effect of the category relocation intervention will have an immediate effect on the basket size and, thus, I won't cater for a phase-in period. Furthermore, prior research and common sense, suggest that supermarket sales exhibit seasonal effects and thus we will accommodate for seasonality in the modeling of both the test (intervention) and control stores.

Further research adhering to the design science paradigm also could improve the contributions of this study by striving to design and test a fully implementable, scalable, system instantiation of the proposed analytical method for the identification of shopping mission. This will allow for ongoing analyses and reports of results required in real-life settings. Furthermore, research on how to complement this approach with customer-unique identifiers and demographic



data, as found in loyalty schemas, would improve the insightfulness of the method. An interesting approach would be to know how shopping missions vary and cross-tabulate them across gender, age groups, and RFM (recency, frequency, and monetary value) database groups.

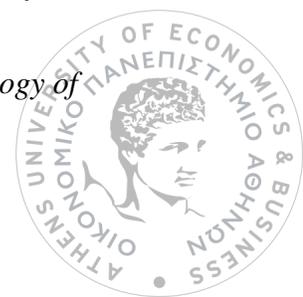
Further research could also shed light on whether shopping missions vary across regional geodemographic properties; do urban stores accommodate different shopping missions than rural stores, for example? Customer-unique identifiers could reveal changes in the composition of shopping goals and shopping missions across time. Customer-specific timestamps may reveal the frequency of each shopping type and mission or the time of day or week when each is most likely to occur. Practitioners could use this information to add samples and displays during these time periods to highlight complementary products or recipes and solutions. Further research also could examine whether, during the product taxonomy preparatory step, retailers can derive both meaningful category descriptions and estimates of profit margins per category. For example, by computing the weighted average of the margins of all the SKUs of a category, retailers could estimate the relative importance of each shopping mission in terms of total share of baskets, revenue, and profit. Finally, further design science research could investigate whether the proposed analytical method—or a variant of it—applies to other retail context, such as home improvement and apparel retail, where a multi-trip analyses might be more appropriate.





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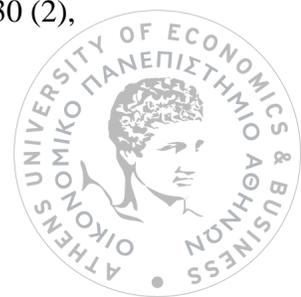
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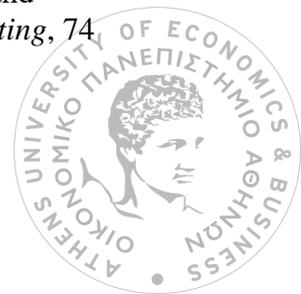
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APPENDIX A – FINAL CLUSTER SOLUTIONS

Identification of Shopping Missions for Hypermarket Pilot (Fact Table 1)

		All	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
Basket	Average Basket Variety (Categories)	16.42	15.89	21.49	9.66	18.56	16.82	17.04	14.1	17.93
Descriptives	Average Basket Size (Items)	28.31	25.49	27.02	26.83	29.21	28.58	31.08	34.77	34.86
	Average Basket Value (€)	35.22	34.14	30.13	32.27	29.31	36.48	51.74	58.82	31.56
	Total Share of Baskets (%)	100%	21%	18%	17%	15%	11%	7%	6%	5%
	Number of Baskets	732,110	153,743	131,779	124,458	109,816	80,532	51,247	43,926	36,605
Product Categories	Fresh Vegetables	411,590	72 %	51 %	47 %	64 %	53 %	43 %	49 %	51 %
	Fresh Chicken	353,388	40 %	37 %	34 %	97 %	40 %	67 %	34 %	35 %
	Milk	348,190	35 %	37 %	100 %	29 %	38 %	65 %	32 %	31 %
	Fresh Meat	344,969	100 %	32 %	28 %	40 %	34 %	37 %	32 %	27 %
	Detergents and Washing	336,988	41 %	100 %	19 %	21 %	42 %	32 %	88 %	18 %
	Fresh Fruit	316,343	46 %	41 %	42 %	45 %	42 %	38 %	45 %	46 %
	Household Cleaning	297,052	19 %	94 %	21 %	38 %	10 %	18 %	92 %	52 %
	Juice	233,601	30 %	4 %	91 %	23 %	42 %	7 %	10 %	8 %
	Shampoo and Shower Gel	222,414	38 %	46 %	18 %	8 %	13 %	1 %	100 %	46 %
	Packaged Cheese	201,322	56 %	4 %	64 %	5 %	15 %	13 %	6 %	59 %
	Canned Food	174,607	66 %	3 %	9 %	47 %	6 %	43 %	8 %	8 %
	Carbonated Drinks	192,251	15 %	5 %	10 %	46 %	98 %	18 %	16 %	17 %
	Pasta	188,027	12 %	18 %	12 %	85 %	14 %	23 %	24 %	14 %
	Cereals	180,991	8 %	32 %	76 %	4 %	8 %	16 %	18 %	15 %
	Chips and Snacks	219,156	12 %	23 %	16 %	26 %	72 %	18 %	17 %	13 %
	Rice	176,408	39 %	13 %	10 %	46 %	9 %	36 %	11 %	11 %
	Freshly Cut Chartuterrie	144,847	49 %	2 %	7 %	34 %	1 %	21 %	5 %	65 %
	Packaged Bakery	161,678	3 %	3 %	77 %	4 %	17 %	14 %	11 %	57 %
	Eggs	155,221	5 %	12 %	48 %	36 %	11 %	9 %	8 %	16 %
	Chocolate and Confectionary	131,208	7 %	9 %	3 %	8 %	73 %	73 %	10 %	26 %
	Biscuits and Sweets	131,903	27 %	5 %	8 %	3 %	43 %	69 %	8 %	11 %
	Coffee and Tea	144,525	32 %	5 %	14 %	5 %	8 %	78 %	8 %	13 %
	Oral Care	138,595	9 %	30 %	12 %	13 %	1 %	7 %	70 %	36 %
	Spirits	73,562	4 %	8 %	7 %	11 %	6 %	1 %	63 %	8 %
	Wines	73,137	14 %	6 %	7 %	11 %	7 %	10 %	16 %	14 %
	Flour	33,926	4 %	4 %	8 %	3 %	3 %	5 %	6 %	4 %



Identification of Shopping Missions for Hypermarket Control (Fact Table 2)

		All	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
Basket	Average Basket Variety (Categories)	17.41	17.82	19.43	11.27	19.89	18.75	18.56	15.15	19.86
Descriptives	Average Basket Size (Items)	30.20	27.02	29.28	29.29	31.87	30.52	32.67	36.59	36.21
	Average Basket Value (€)	37.47	35.18	31.58	34.84	31.36	39.37	54.88	60.78	33.11
	Total Share of Baskets (%)	100%	24%	18%	16%	13%	11%	8%	6%	4%
	Number of Baskets	632,331	151,759	113,819	101,172	82,203	69,556	50,586	37,939	25,293
Product	Fresh Vegetables	357,960	73%	62%	51%	46%	53%	43%	48%	41%
Categories	Fresh Chicken	320,653	40%	97%	37%	36%	41%	65%	33%	34%
	Fresh Meat	310,789	100%	38%	31%	29%	34%	37%	30%	27%
	Detergents and Washing	290,996	43%	23%	100%	17%	43%	33%	87%	19%
	Milk	275,821	33%	27%	35%	100%	36%	65%	32%	29%
	Fresh Fruit	269,055	44%	46%	41%	41%	44%	38%	43%	34%
	Household Cleaning	242,592	17%	38%	94%	21%	12%	18%	91%	38%
	Oil and Vinegar	217,426	66%	50%	1%	7%	7%	84%	12%	7%
	Canned Food	212,936	64%	47%	4%	8%	5%	85%	10%	6%
	Juice	192,949	29%	24%	6%	93%	44%	8%	8%	9%
	Freshly Cut Chartuterrie	183,059	30%	25%	13%	18%	61%	43%	4%	65%
	Rice	181,174	37%	45%	13%	12%	9%	77%	13%	10%
	Shampoo and Shower Gel	173,036	36%	6%	45%	16%	14%	3%	100%	45%
	Freshly Cut Cheese	169,280	33%	26%	11%	13%	56%	45%	8%	59%
	Carbonated Drinks	184,071	13%	46%	7%	7%	100%	17%	17%	16%
	Pasta	181,162	10%	83%	19%	12%	13%	22%	22%	12%
	Packaged Cheese	149,697	56%	7%	6%	35%	17%	13%	6%	6%
	Ready Meals	140,098	11%	27%	23%	14%	16%	73%	16%	15%
	Cereals	139,763	8%	6%	32%	78%	8%	18%	18%	13%
	Fresh Fish and Seafood	133,649	48%	34%	2%	5%	3%	19%	7%	6%
	Beer	114,477	34%	6%	7%	16%	37%	9%	9%	13%
	Oral Care	110,707	11%	14%	28%	12%	2%	7%	68%	35%
	Packaged Bakery	114,603	3%	5%	4%	78%	18%	13%	13%	48%
	Chocolate and Confectionary	97,657	6%	9%	8%	4%	74%	10%	10%	28%
	Wines	68,228	16%	12%	7%	8%	5%	9%	14%	13%
	Spirits	64,725	6%	9%	8%	6%	7%	3%	63%	8%



Identification of Shopping Missions for Supermarket Control (Fact Table 4)

		All	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
Basket	Average Basket Variety (Categories)	10.95	9.87	10.45	11.31	11.78	8.89	12.35	16.97
Descriptives	Average Basket Size (Items)	21.31	17.74	18.23	19.75	20.77	24.32	28.49	39.34
	Average Basket Value (€)	19.45	16.10	16.91	16.96	18.61	22.02	26.67	38.34
	Total Share of Baskets (%)	100%	24%	22%	17%	14%	9%	8%	6%
	Number of Baskets	269,485	64,676	59,286	45,812	37,727	24,253	21,558	16,169
Product Categories	Milk	120,205	23 %	100 %	26 %	42 %	38 %	37 %	27 %
	Juice	98,145	11 %	75 %	43 %	13 %	13 %	18 %	47 %
	Chocolate and Confectionary	88,137	7 %	34 %	100 %	13 %	18 %	19 %	19 %
	Coffee and Tea	85,056	7 %	68 %	13 %	13 %	12 %	100 %	21 %
	Carbonated Drinks	83,518	43 %	2 %	78 %	9 %	43 %	3 %	17 %
	Eggs	81,931	59 %	39 %	6 %	9 %	34 %	8 %	18 %
	Biscuits and Sweets	79,443	11 %	27 %	63 %	16 %	16 %	73 %	14 %
	Packaged Bakery	74,870	13 %	46 %	16 %	16 %	5 %	21 %	63 %
	Fresh Vegetables	67,543	72 %	12 %	7 %	8 %	12 %	15 %	9 %
	Packaged Cheese	67,176	36 %	6 %	0 %	12 %	24 %	3 %	84 %
	Fresh Meat	61,614	68 %	5 %	7 %	10 %	21 %	9 %	8 %
	Yoghurt	54,594	10 %	43 %	19 %	12 %	13 %	22 %	12 %
	Cereals	52,562	6 %	63 %	8 %	8 %	7 %	11 %	6 %
	Freshly Cut Cheese	51,318	56 %	7 %	6 %	6 %	17 %	6 %	5 %
	Pasta	48,762	13 %	7 %	7 %	16 %	100 %	17 %	8 %
	Condensed Milk	48,455	11 %	27 %	9 %	9 %	2 %	68 %	12 %
	Oil and Vinegar	47,248	34 %	6 %	7 %	13 %	37 %	9 %	16 %
	Canned Food	46,647	29 %	0 %	4 %	6 %	82 %	10 %	8 %
	Freshly Cut Chartuterrie	44,645	3 %	5 %	4 %	8 %	18 %	13 %	78 %
	Chips and Snacks	43,772	8 %	6 %	52 %	13 %	8 %	18 %	9 %
	Household Cleaning	39,900	12 %	9 %	8 %	100 %	14 %	7 %	5 %
	Dry Fruits and Nuts	36,488	3 %	5 %	63 %	10 %	1 %	3 %	0 %
	Rice	35,868	6 %	4 %	11 %	14 %	72 %	8 %	9 %
	Detergents and Washing	32,756	6 %	9 %	8 %	88 %	9 %	10 %	4 %
	Fresh Fruit	29,495	9 %	9 %	17 %	23 %	4 %	7 %	11 %
	Oral Care	19,044	4 %	5 %	4 %	38 %	4 %	7 %	8 %



Identification of Shopping Missions for Convenience Pilot (Fact Table 5)

		All	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Basket	Average Basket Variety (Categories)	6.66	5.87	6.45	7.31	7.78	4.89	8.35
Descriptives	Average Basket Size (Items)	13.62	10.75	11.25	12.76	13.83	17.41	21.56
	Average Basket Value (€)	14.72	12.18	12.97	13.03	14.66	18.09	22.75
	Total Share of Baskets (%)	100%	24%	22%	17%	14%	12%	11%
	Number of Baskets	126,858	30,445	27,908	21,565	17,76	15,222	13,954
Product Categories	Milk	55,067	95 %	14 %	26 %	32 %	38 %	37 %
	Packaged Bakery	50,851	76 %	9 %	62 %	46 %	5 %	21 %
	Juice	43,701	65 %	23 %	43 %	21 %	13 %	18 %
	Packaged Cheese	39,053	36 %	14 %	88 %	6 %	24 %	3 %
	Freshly Cut Cheese	37,305	36 %	5 %	94 %	7 %	17 %	6 %
	Freshly Cut Chartuterrie	36,963	26 %	18 %	86 %	5 %	18 %	13 %
	Carbonated Drinks	35,560	2 %	86 %	17 %	2 %	43 %	3 %
	Eggs	33,280	59 %	13 %	6 %	39 %	7 %	18 %
	Fresh Vegetables	31,876	72 %	9 %	7 %	12 %	12 %	15 %
	Coffee and Tea	31,477	17 %	21 %	13 %	86 %	12 %	5 %
	Cereals	31,105	73 %	6 %	8 %	16 %	7 %	11 %
	Chips and Snacks	29,958	8 %	64 %	23 %	6 %	8 %	18 %
	Household Cleaning	28,088	12 %	9 %	15 %	9 %	100 %	13 %
	Detergents and Washing	27,574	16 %	14 %	8 %	9 %	93 %	10 %
	Biscuits and Sweets	26,792	11 %	14 %	11 %	76 %	16 %	9 %
	Chocolate and Confectionary	26,754	9 %	19 %	13 %	66 %	18 %	11 %
	Dry Fruits and Nuts	26,634	3 %	75 %	15 %	5 %	1 %	3 %
	Canned Food	26,492	29 %	8 %	4 %	7 %	13 %	82 %
	Condensed Milk	17,685	11 %	12 %	9 %	27 %	2 %	28 %
	Yoghurt	13,920	10 %	12 %	9 %	13 %	3 %	22 %
	Fresh Fruit	12,778	9 %	11 %	17 %	9 %	4 %	7 %
	Pasta	12,216	13 %	8 %	7 %	7 %	8 %	17 %
	Oral Care	11,011	7 %	12 %	7 %	8 %	7 %	11 %
	Rice	10,316	6 %	9 %	11 %	4 %	4 %	17 %
	Shampoo and Shower Gel	8,004	6 %	5 %	5 %	5 %	13 %	6 %
	Beer	7,827	7 %	5 %	6 %	8 %	4 %	7 %



Identification of Shopping Missions for Convenience Control (Fact Table 6)

		All	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Basket	Average Basket Variety (Categories)	7.27	6.29	6.82	8.12	9.08	6.01	7.49
Descriptives	Average Basket Size (Items)	15.53	11.96	13.17	14.48	15.63	18.65	23.29
	Average Basket Value (€)	16.89	13.89	15.13	14.28	18.47	19.14	24.18
	Total Share of Baskets (%)	100%	21%	19%	18%	16%	14%	12%
	Number of Baskets	114,151	23,971	21,688	20,547	18,264	15,981	13,698
Product Categories	Milk	47,817	97 %	28 %	12 %	30 %	36 %	35 %
	Packaged Bakery	45,228	75 %	60 %	11 %	44 %	6 %	22 %
	Juice	38,708	67 %	42 %	25 %	22 %	12 %	18 %
	Packaged Cheese	35,995	35 %	88 %	16 %	6 %	22 %	4 %
	Freshly Cut Cheese	34,411	37 %	92 %	5 %	5 %	16 %	8 %
	Freshly Cut Chartuterrie	33,550	25 %	85 %	19 %	3 %	17 %	14 %
	Carbonated Drinks	30,272	4 %	16 %	88 %	2 %	42 %	5 %
	Coffee and Tea	29,657	15 %	14 %	23 %	86 %	11 %	7 %
	Eggs	28,497	59 %	7 %	12 %	38 %	5 %	20 %
	Household Cleaning	26,971	10 %	14 %	9 %	11 %	100 %	12 %
	Detergents and Washing	26,721	16 %	8 %	14 %	10 %	94 %	11 %
	Cereals	26,656	72 %	10 %	8 %	17 %	6 %	11 %
	Chocolate and Confectionary	25,748	8 %	13 %	21 %	67 %	19 %	11 %
	Chips and Snacks	25,487	9 %	23 %	65 %	4 %	10 %	20 %
	Fresh Vegetables	25,332	70 %	5 %	8 %	11 %	10 %	17 %
	Biscuits and Sweets	24,430	10 %	11 %	12 %	75 %	15 %	8 %
	Canned Food	23,204	31 %	3 %	6 %	5 %	13 %	80 %
	Dry Fruits and Nuts	20,709	3 %	14 %	75 %	5 %	2 %	2 %
	Condensed Milk	16,235	9 %	11 %	12 %	29 %	3 %	25 %
	Yoghurt	12,927	12 %	11 %	10 %	12 %	2 %	24 %
	Fresh Fruit	11,521	10 %	19 %	9 %	9 %	2 %	8 %
	Pasta	11,466	15 %	6 %	9 %	7 %	7 %	19 %
	Rice	10,300	7 %	12 %	11 %	4 %	4 %	18 %
	Oral Care	9,600	5 %	8 %	11 %	10 %	5 %	13 %
	Shampoo and Shower Gel	7,283	7 %	5 %	5 %	4 %	13 %	5 %
	Beer	6,780	9 %	7 %	4 %	7 %	2 %	5 %

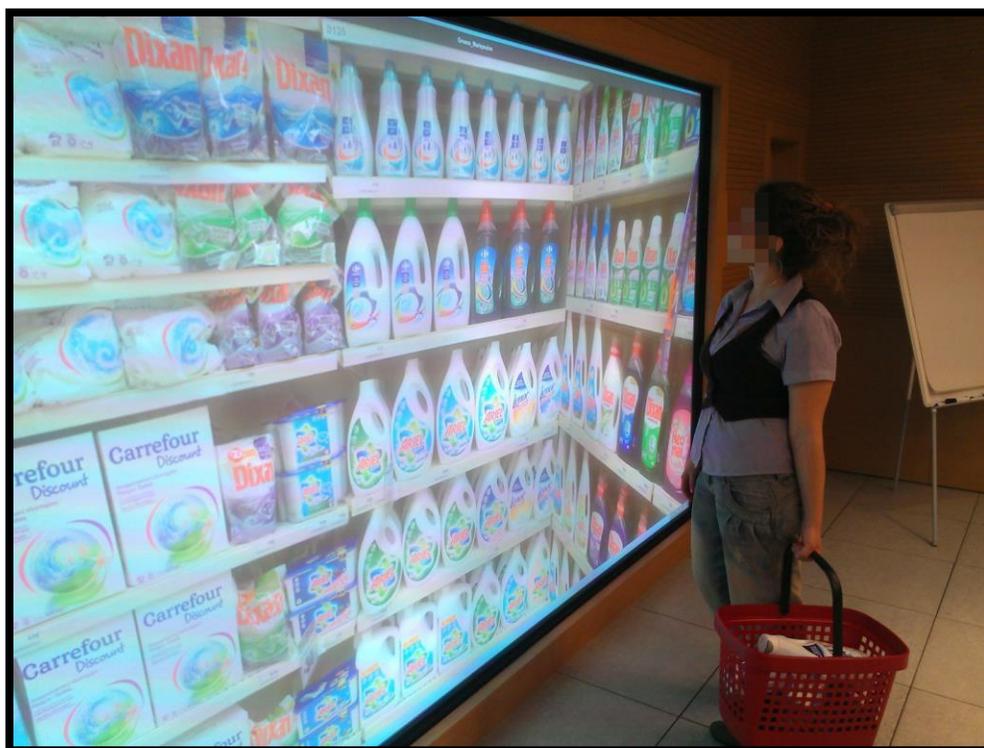




APPENDIX B – VIRTUAL STORE TECHNOLOGY



Video available online at: http://www.eltrun.gr/evideos/Navigation_Demonstration.mp4





APPENDIX C – MINDSET MEASURE LAB EXPERIMENT 1

Imagine that the president of your high school’s alumni association is about to organize a 10-day excursion and is asking you to help by assuming one of the following roles. Both roles are similar in terms of time commitment and general requirements (in terms of degree, skill, and knowledge). After reading these descriptions, please indicate your preference for one of these roles (1 = “definitely prefer A,” and 7 = “definitely prefer B”).

Role A. The key responsibility for Role A includes achieving the best possible result in every implementation step of the excursion. Role A involves achieving the best possible prices for the accommodation and transportation for the defined destination dates. The key requirements for Role A are project management skills and being detail-oriented and efficient.

Role B. The key responsibilities for Role B include achieving the best possible result in every step of the development of the excursion. Role B involves deliberating upon alternative destinations and dates, as well as choosing accommodation and modes of transportation. The key requirements for Role B are project development skill and being big-picture oriented and organized.

